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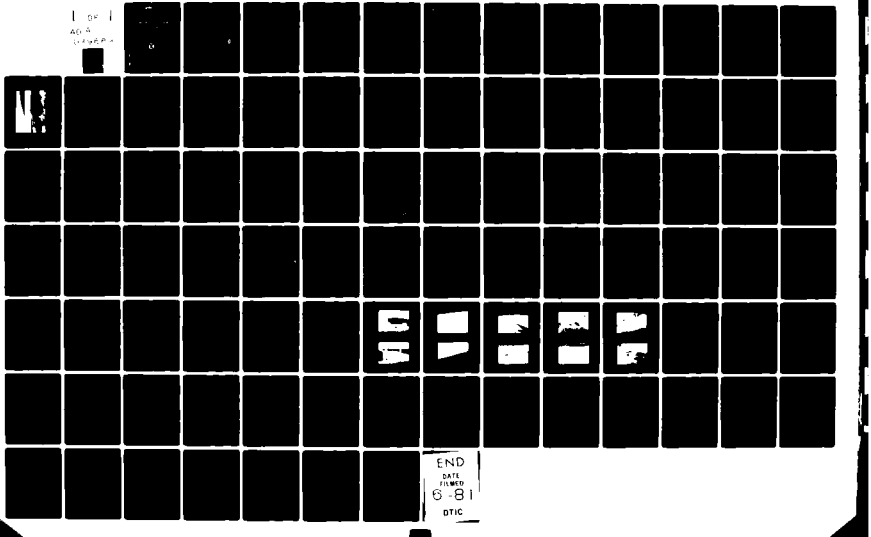

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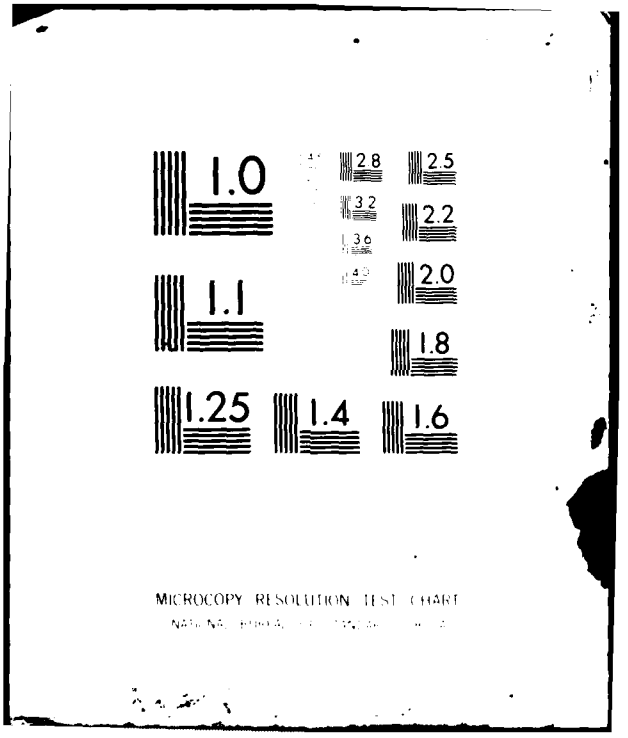
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LEVEL II

National Dam Safety ... Camp Beisler Dam
(NJ-00141), RARITAN RIVER BASIN,
SPRUCE RUN, HUNTERDON COUNTY,
NEW JERSEY. ... 1

Inspection Report

CAMP BEISLER DAM
NJ 00141

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PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

DACW61-79-C-0011

Joint Publication

Original contains color plates: All DTIC reproductions will be in black and white

DEPARTMENT OF THE ARMY

Philadelphia District
Corps of Engineers
Philadelphia, Pennsylvania

Rept. No. 28 DAEN-NAP-53842/NJ00141-81/05

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Dams
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Visual Inspection
Structural Analysis
National Dam Safety Program
Outlet works
Camp Beisler Dam, N.J.

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report cites results of a technical investigation as to the dam's adequacy. The inspection and evaluation of the dam is as prescribed by the National Dam Inspection Act, Public Law 92-367. The technical investigation includes visual inspection, review of available design and construction records, and preliminary structural and hydraulic and hydrologic calculations, as applicable. An assessment of the dam's general condition is included in the report.

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CUSTOM HOUSE—2 D & CHESTNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

IN REPLY REFER TO
NAPEN-N

28 MAY 1981

Honorable Brendan T. Byrne
Governor of New Jersey
Trenton, New Jersey 08621

Dear Governor Byrne:

Inclosed is the Phase I Inspection Report for Camp Beisler Dam in Hunterdon County, New Jersey which has been prepared under authorization of the Dam Inspection Act, Public Law 92-367. A brief assessment of the dam's condition is given in the front of the report.

Based on visual inspection, available records, calculations and past operational performance, Camp Beisler Dam, initially listed as a high hazard potential structure, but reduced to a significant hazard potential structure as a result of this inspection, is judged to be in good overall condition. The dam's spillway is considered inadequate because a flow equivalent to 62 percent of the Spillway Design Flood - SDF - would cause the dam to be overtopped. (The SDF, in this instance is one half of the Probable Maximum Flood). To ensure adequacy of the structure, the following actions, as a minimum, are recommended:

a. The spillway's adequacy should be determined by a qualified professional consultant engaged by the owner using more sophisticated methods, procedures and studies within twelve months from the date of approval of this report. Within three months of the consultant's findings remedial measures to ensure spillway adequacy should be initiated.

b. The following remedial actions should be initiated within tweleve months from the date of approval of this report:

(1) Determine if the observed flow near the left end of the dam is seepage from the dam and if so, it should be monitored monthly to determine its volume and whether it presents a problem to the safety of the dam.

(2) Construct a concrete headwall and apron at the outlet end of the discharge pipe. Also, attempt to locate the toe drain outlets and if found provide for their discharge through the headwall.

(3) All brush should be removed from the upstream slope to avoid any problems that may develop from roots. The slope should then be reseeded to develop a growth of grass for surface erosion protection.

(4) Determine if the low-level outlet gate is operable, and if not, institute remedial action to make it operable.

c. The owner should develop an emergency action plan (if one is not already available) outlining actions to be taken by the operator to minimize downstream effects of an emergency and establish a flood warning system for the downstream communities within three months from the date of approval of this report.

d. The owner should develop written operating procedures and a periodic maintenance plan to ensure the safety of the dam, within one year from the date of approval of this report.

A copy of the report is being furnished to Mr. Dirk C. Hofman, New Jersey Department of Environmental Protection, the designated State Office contact for this program. Within five days of the date of this letter, a copy will also be sent to Congressman Courter of the Thirteenth District. Under the provision of the Freedom of Information Act, the inspection report will be subject to release by this office, upon request, five days after the date of this letter.

Additional copies of this report may be obtained from the National Technical Information Services (NTIS), Springfield, Virginia 22161 at a reasonable cost. Please allow four to six weeks from the date of this letter for NTIS to have copies of the report available.

An important aspect of the Dam Inspection Program will be the implementation of the recommendations made as a result of the inspection. We accordingly request that we be advised of proposed actions taken by the State to implement our recommendations.

Sincerely,

Kenneth R. Moser

KENNETH R. MOSER
Major, Corps of Engineers
Acting District Engineer

1 Incl
As stated

Copies furnished:
Mr. Dirk C. Hofman, P.E., Deputy Director
Division of Water Resources
N.J. Dept. of Environmental Protection
P.O. Box CN029
Trenton, NJ 08625

Mr. John O'Dowd, Acting Chief
Bureau of Flood Plain Regulation
Division of Water Resources
N.J. Dept. of Environmental Protection
P.O. Box CN029
Trenton, NJ 08625

CAMP BEISLER DAM (NJ00141)

CORPS OF ENGINEERS ASSESSMENT OF GENERAL CONDITIONS

This dam was inspected on 12 January and 3 February 1981 by Harris - ECI Associates, under contract to the State of New Jersey. The State, under agreement with the U.S. Army Engineer District, Philadelphia, had this inspection performed in accordance with the National Dam Inspection Act, Public Law 92-367.

Camp Beisler Dam, initially listed as a high hazard potential structure, but reduced to a significant hazard potential structure as a result of this inspection, is judged to be in good overall condition. The dam's spillway is considered inadequate because a flow equivalent to 62 percent of the Spillway Design Flood - SDF - would cause the dam to be overtopped. (The SDF, in this instance is one half of the Probable Maximum Flood). To ensure adequacy of the structure, the following actions, as a minimum, are recommended:

a. The spillway's adequacy should be determined by a qualified professional consultant engaged by the owner using more sophisticated methods, procedures and studies within twelve months from the date of approval of this report. Within three months of the consultant's findings remedial measures to ensure spillway adequacy should be initiated.

b. The following remedial actions should be initiated within twelve months from the date of approval of this report:

(1) Determine if the observed flow near the left end of the dam is seepage from the dam and if so, it should be monitored monthly to determine its volume and whether it presents a problem to the safety of the dam.

(2) Construct a concrete headwall and apron at the outlet end of the discharge pipe. Also, attempt to locate the toe drain outlets and if found provide for their discharge through the headwall.

(3) All brush should be removed from the upstream slope to avoid any problems that may develop from roots. The slope should then be reseeded to develop a growth of grass for surface erosion protection.

(4) Determine if the low-level outlet gate is operable, and if not, institute remedial action to make it operable.

c. The owner should develop an emergency action plan (if one is not already available) outlining actions to be taken by the operator to minimize downstream effects of an emergency and establish a flood warning system for the downstream communities within three months from the date of approval of this report.

d. The owner should develop written operating procedures and a periodic maintenance plan to ensure the safety of the dam, within one year from the date of approval of this report.

APPROVED: Kenneth R Moser

KENNETH R. MOSER
Major, Corps of Engineers
Acting District Engineer

DATE: 27 May 1981

RARITAN RIVER BASIN

SPRUCE RUN, HUNTERDON COUNTY

NEW JERSEY

CAMP BEISLER DAM

NJ00141

PHASE I INSPECTION REPORT

NATIONAL DAM SAFETY PROGRAM

DEPARTMENT OF THE ARMY

PHILADELPHIA DISTRICT, CORPS OF ENGINEERS

PHILADELPHIA, PENNSYLVANIA 19106

MAY, 1981

PHASE I INSPECTION REPORT

NATIONAL DAM SAFETY PROGRAM

Name:	Camp Beisler Dam, I.D. NJ 00141
State Located:	New Jersey
County Located:	Hunterdon County
Stream:	Spruce Run
River Basin:	Raritan River
Date of Inspection:	January 12, and February 3, 1981

Assessment of General Conditions

Camp Beisler Dam is an earthfill dam with a concrete drop inlet, the main spillway, located in the center of the dam. In addition there is an auxiliary spillway at the right end of the dam. The overall condition of the dam is good. There are no signs of distress or instability in the embankment. Possible seepage was observed approximately 100 feet from the left end of the dam. The low-level outlet was not opened and is not used. The hazard potential is recommended to be downgraded from "high" to "significant".

Camp Beisler Dam is considered inadequate in view of its lack of spillway capacity to pass the SDF (1/2 PMF) without overtopping the dam. The spillway is capable of passing a flood equal to 30.5 percent of the PMF (61 percent of the 1/2 PMF), and is assessed as "inadequate".

At present, the engineering data available is not sufficient to make a definitive statement on the stability of the dam, but based on the findings of the visual inspection, the preliminary assessment of static stability is that it is satisfactory. The following actions are recommended along with a timetable for their completion. All recommended actions should be conducted under the supervision of an Engineer who is experienced in the design, construction and inspection of dams.

1. Carry out a more precise hydrologic and hydraulic analysis of the dam within twelve months, to determine the need and type of mitigating measures necessary. Based on the results of these studies, remedial measures should be instituted. This should include the installation of a tailwater gage.

2. Determine if the observed flow is seepage from the dam and if so, it should be monitored monthly to determine its volume and whether it presents a problem to the safety of the dam.

3. Construct a concrete headwall and apron at the outlet end of the discharge pipe. Also, attempt to locate the toe drain outlets, and if found provide for their discharge through the headwall. This work should be started within twelve months.

4. All brush should be removed from the upstream slope to avoid problems that may develop from roots. The slope should then be seeded to develop a growth of grass for surface erosion protection. This program should be started within twelve months.

5. Determine if low-level outlet gate is operable, and if not institute remedial action to make it operable within twelve months.

6. The owner should develop an emergency action plan (if one is not already available) outlining actions to be taken by the operator to minimize downstream effects of an emergency and establish a flood warning system for the downstream communities within three months.

Furthermore, while of a less urgent nature, the following additional action is recommended and should be carried out within twelve months.

The owner should develop within one (1) year after formal approval of the report, written operating procedures and a periodic maintenance plan to insure the safety of the dam.

John P. Talerico. P.E.
HARRIS - ECI ASSOCIATES

Photo taken January 12, 1981

C A M P B E I S L E R D A M

View from top of auxiliary spillway, toward left end of dam. Area of grass at center right of photo is location of low-level outlet channel.

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the office of the Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

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PHASE I INPSECTION REPORT
NATIONAL DAM SAFETY PROGRAM

CAMP BEISLER DAM, I.D. NJ 00141

S E C T I O N 1

1. PROJECT INFORMATION

1.1 General

a. Authority

The National Dam Inspection Act (Public Law 92-367, 1972) provides for the National Inventory and Inspection Program by the U.S. Army Corps of Engineers. This inspection was made in accordance with this authority under Contract C-FPM No. 35 with the State of New Jersey who, in turn, is contracted to the Philadelphia District of the Corps of Engineers, and was carried out by the engineering firm of Harris-ECI Associates of Woodbridge, New Jersey.

b. Purpose of Inspection

The visual inspection of Camp Beisler Dam was made on January 12 and February 3, 1981. The purpose of the inspection was to make a general assessment as to the structural integrity and operational adequacy of the dam embankment and its appurtenant structures.

c. Scope of Report

The report summarizes available pertinent data relating to the project; presents a summary of visual observations made during the field inspection; presents an evaluation of hydrologic and hydraulic conditions at the site; presents an evaluation as to the structural adequacy of the various project features; and assesses the general condition of the dam with respect to safety.

1.2 Description of Project

a. Description of Dam and Appurtenances

Camp Beisler Dam is an earthfill dam approximately 630 feet long and 17.1 feet high. There are two spillways, one is a 8 foot x 6 foot concrete drop inlet with a 14 foot x 12 foot concrete anti-vortex cover and the other is a 70 foot wide earth channel auxiliary spillway with a concrete control sill. The drop inlet is located 400 feet from the right end of the dam and its crest is 5.1 feet below the top of the embankment. The concrete anti-vortex cover is 12-inches thick and is supported on four 12-inch diameter concrete columns 2.5 feet high. In the front wall of the spillway are two-6-inch steel cold water outlet pipes. The pipes, with inverts 1.75 feet below the spillway crest and tops one inch below the crest extend one foot inside the inlet. Attached to lake side of the front wall is a 36-inch diameter half round corrugated metal pipe for cold water control. The auxiliary spillway located at the right end of the dam, has a crest elevation 2.8 feet below the top of the dam. The flow from the drop inlet discharges into the downstream channel through a 60-inch corrugated metal pipe which also serves as the low-level outlet. The auxiliary spillway discharges onto the existing ground beyond the toe of the slope and flows into the downstream channel.

The embankment had a design top width of 15 feet with a 2.5H:1V slope on both faces. During construction, the excess excavated material was spoiled on the downstream slope of the dam along both sides of the discharge channel. This resulted in the dam having an irregular crest width, varying up to 100 feet wide left and 140 feet wide right of the spillway. According to the plans, gravel toe drains were supposed to have been constructed for distance 200 feet left and 120 feet right of the outlet pipe.

The low-level outlet consists of a 60-inch corrugated metal pipe that carries the discharge from the main spillway. The low-level flow into the pipe is controlled by a 16-inch rising stem sluice gate attached to the upstream face of the inlet. The gate is raised manually by turning a hand-wheel attached to the top of the frame. The pipe, which discharges directly into the downstream channel, has two anti-seep collars extending two feet beyond the outside of the pipe.

The downstream channel starts at the outlet and meanders down past the embankment toe on the left into a wooded area and then crosses under Sharrer Road approximately 800 feet from the dam. On the left before Sharrer Road is a development of more than a dozen homes. The houses appear to be above the flood plain.

A generalized description of soil conditions is contained in Report No. 6, Hunterdon County, Engineering Soil Survey of New Jersey, by Rutgers University. The report, dated 1952, describes the dam area as gneissic bedrock with overlaying silts, silty clays and silty sands of variable depths. The U.S.G.S. Geologic Overlay Sheet 22 classifies the rock as undifferentiated pre-cambian. The downstream channel is described as recent alluvium of variable depth.

b. Location

Camp Beisler Dam is located in Camp Beisler on Spruce Run, in the Township of Lebanon, Hunterdon County, New Jersey. The camp is accessible from Route 57 at Penwell by way of Penwell Road to Turkey Top Road to Sharrer Road to Pleasant Grove Road.

c. Size Classification

According to the "Recommended Guidelines for Safety Inspection of Dams" by the U.S. Department of the Army, Office of the Chief Engineers, the dam is classified in the dam size category as being "small", since its storage volume of 61 acre-feet is less than 1,000 acre-feet. The dam is also classified as "small" because its height of 17.1 feet is less than 40 feet. The overall size classification of Camp Beisler Dam is "small".

d. Hazard Classification

A hazard potential classification of "significant" has been assigned to Camp Beisler Dam on the basis that even though the homes downstream are above the flood reach, they are close enough to the stream that children play within the flood reach on both sides of the stream. Therefore the possibility exists of the loss of a few lives in the event of dam failure.

e. Ownership

Camp Beisler Dam is owned by:

New Jersey Synod Lutheran
Church of America
1930 State Highway No.33
Hamilton Square, NJ 08690

Attention: Mr. Mark Burkhardt
Camp Director
(201) 832-7264

f. Purpose

Camp Beisler Dam is presently used for recreational purposes only.

g. Design and Construction History

Camp Beisler Dam was designed by the U.S. Soil Conservation Service. The permit to construct the dam was issued on August 26, 1968 with the dam being completed in February 1971.

h. Normal Operating Procedures

The discharge from the lake is unregulated and allowed to naturally balance the inflow into the lake. According to the owner the low-level outlet is not used.

1.3 Pertinent Data

a. Drainage Area	1.21 sq. mi.
b. Discharge at Dam Site	
Ungated spillway capacity at elevation of top of dam:	1,416 cfs (884.1 NGVD)
Total spillway capacity at maximum pool elevation (SDF):	2,675 (884.45 NGVD)
c. Elevation (Feet above NGVD)	
Top of dam:	884.1
Maximum pool design surcharge (SDF):	884.45
Recreation pool:	879.2
Spillway crest: Main:	879.0
Auxiliary:	881.3
Streambed at centerline of dam:	867 (estimated)
Maximum tailwater:	870 (estimated)
d. Reservoir	
Length of maximum pool:	2,500 ft. (estimated)
Length of recreation pool:	900 ft. (estimated)
e. Storage (acre-feet)	
Spillway Crest:	20 (879.0 NGVD)
Top of dam:	61
Maximum pool (SDF):	65
f. Reservoir Surface (acres)	
Top of dam:	15.2 (estimated)
Maximum pool (SDF):	15.5 (estimated)
Recreation pool:	6.0 (estimated)
Spillway crest:	5.0 (879.0 NGVD)

g. Dam

Type:	Earthfill with concrete drop inlet.
Length:	630 ft. (effective)
Height:	17.1 ft.
Top width:	Varies from 15 ft. - 140 ft.
Side slopes - Upstream:	2.5H:1V
- Downstream:	2.5H:1V
Zoning:	Unknown
Impervious core:	None
Control Sill:	70 ft. concrete sill at auxiliary spillway.
Grout curtain:	None.

h. Diversion and Regulating Tunnel

i. Spillway

Type:	Main: Concrete Drop Inlet Auxiliary: Earth channel
Length of weir:	Main: 28 ft. Auxiliary: 70 ft.
Crest elevation:	Main: 879.0 (NGVD) Auxiliary: 881.3 (NGVD)
Gates:	None
U/S Channel:	Camp Beisler Lake
D/S Channel:	Main: Natural Channel Auxiliary: Existing ground

j. Regulating Outlets

Low level outlet:	60-inch C.M.P.
Controls:	Manually controlled 16-inch sluice gate.
Emergency gate:	None
Outlet:	867.0 NGVD

SECTION 2

2. ENGINEERING DATA

2.1 Design

Drawings and specifications for the construction of the Camp Beisler Dam are available in the files of NJ Department of Environmental Protection (NJ-DEP) in Trenton and also at the offices of the U.S. Department of Agriculture - Soil Conservation Service (SCS) in Somerset N.J. The structural design data of the spillway as well as the hydrology and hydraulic data for a 25-year and 50-year design storm is also available at the above locations. One drawing shows the location of and data obtained from test pits taken along the dam. Soil test results, design computations and other geotechnical data needed to assess the stability properly are not available.

2.2 Construction

Data is not available concerning the as-built construction of the dam. No data exists of construction methods, borrow sources or other data pertinent to the construction of the dam.

2.3 Operation

Formal operation records are not kept for the dam and reservoir. The lake is allowed to operate naturally without regulation.

2.4 Evaluation

a. Availability

The availability of engineering data is good. The construction plans and specifications for the dam are available from the NJ-DEP and the SCS.

b. Adequacy

The engineering data available from the plans and from the field was adequate to perform hydrologic and hydraulic computations. The data was insufficient to perform stability analysis, but a preliminary evaluation could be made based on visual observations.

c. Validity

The information contained in the drawings and checked by limited field measurements appears to be valid, except as noted herein. The crest width of the dam is not 15 feet as shown on the original plans, but varys up to 100 feet wide left and 140 feet wide right of the spillway. The gravel toe drain outlets shown at the low-level outlet discharge could not be found.

SECTION 3

3. VISUAL INSPECTION

3.1 Findings

a. General

The visual inspection of Camp Beisler Dam revealed the dam and spillways to be in good condition. At the time of the inspection the lake level was just below the crest of the main spillway with the water discharging through the cold water pipes.

b. Dam

The earth embankment appears sound. No surface cracking on the embankment or at the toe was noticed. No sloughing or erosion of the embankment was observed. The vertical alignment of the crest is good. The horizontal alignment of the crest along the upstream slope is good, but the downstream crest alignment is irregular since that section was a spoil disposal area during construction. One area of possible seepage was observed at the downstream toe approximately 100 feet from the left end of the dam. Since this section is in the disposal area and about 200 feet from the upstream face the source of the water may not be seepage from the dam. There is a heavy growth of brush along the entire upstream face of the embankment. No evidence of burrowing by animals was observed. The gravel toe drain outlet pipes, shown on the plans to be on each side of the low-level outlet pipe, could not be located.

c. Appurtenant Structures

1. Spillways

The main spillway is a drop inlet structure with two cold water outlet pipes and a sluice gate and is in good condition. Only minor spalling in the concrete was observed. The auxiliary spillway, which is grass covered is in good condition. There is one crack in the crest of the concrete control sill located approximately 25 feet from the left end. Horizontal and vertical alignment of the auxiliary spillway appeared good.

2. Bridge and Piers

Concrete columns, part of the main spillway, support the concrete anti-vortex cover. The cover and columns are in good condition.

3. Outlet Works

The low-level outlet works is also the main spillway. It consists of a drop inlet with a 16-inch rising stem sluice gate, operated by a handwheel attached to the top of the frame, at the upstream face of the drop inlet and a 60-inch corrugated metal pipe that carries the flow from the drop inlet directly downstream into Spruce Run. The outlet is in excellent condition. There is no headwall at the end of the 60-inch C.M.P. Most of the slope riprap at the pipe outlet is missing.

d. Reservoir Area

The reservoir's side slopes are moderately steep and wooded. There is a swimming beach along the right shore looking upstream. There is no indication of slope instability.

e. Downstream Channel

The downstream channel is in good condition. The channel which starts at the outlet meanders down past the spoil area on the left into a wooded area approximately 150-feet from the crest. The bottom of the channel is rocky with no debris. The side slopes of the channel through the spoil area are moderately steep with a heavy growth of brush, once into the wooded area the side slopes become flat. There is some erosion along the right bank within the spoil disposal area. A development of more than a dozen homes exists approximately 500 feet downstream above the flood reach on the left side of the stream.

SECTION 4

4. OPERATIONAL PROCEDURES

4.1 Procedures

Camp Beisler Dam is used to impound water for recreational activities. The level of the lake is maintained through the unregulated flow over the spillway.

4.2 Maintenance of the Dam

There is no regular inspection and maintenance program for the dam and appurtenant structures. The NJ Synod Lutheran Church is responsible for the maintenance of the dam.

4.3 Maintenance of Operating Facilities

The low-level outlet operating facilities consist of the one manually operated 16-inch sluice gate. Operation of the gate was not demonstrated as the handwheel was not available.

4.4 Evaluation

The present operational and maintenance procedures are fair with the dam and spillway being maintained in a serviceable condition.

SECTION 5

5. HYDRAULIC/HYDROLOGIC

5.1 Evaluation of Features

a. Design

The drainage area above Camp Beisler Dam is approximately 1.2 square miles. A drainage map of the water shed of the dam site is presented on Plate 1, Appendix D.

The topography within the basin is generally moderately sloped. Elevations range from approximately 1,040 feet above NGVD at the west end of the watershed to about 870 feet at the dam site. Land use patterns within the watershed are mostly woodland.

The evaluation of the hydraulic and hydrologic features of the dam was based on criteria set forth in the Corps guidelines and additional guidance provided by the Philadelphia District, Corps of Engineers. The SDF for the Dam falls in a range of 1/2 PMF to PMF. In this case, the low end of the range, 1/2 PMF, is chosen since the factors used to select size and hazard classification are on the low-side of their respective ranges.

The Probable Maximum Flood (PMF) was calculated from the probable maximum precipitation using Hydrometeorological Report No. 33 with standard reduction factors. Due to the small drainage area, the SCS triangular hydrograph transformed to a curvilinear hydrograph was adopted for developing the unit hydrograph, with the aid of the HEC-1-DB Flood Hydrograph Computer Program.

Initial and constant infiltration loss rates were applied to the Probable Maximum Precipitation to obtain rainfall excesses. The rainfall excesses were applied to the unit hydrograph to obtain the PMF and various ratios of PMF utilizing program HEC-1-DB.

The SDF peak outflow calculated for the dam is 2,675 cfs. This value is derived from the half PMF, and results in overtopping of the dam, assuming that the lake was originally at the spillway crest elevation.

The stage-outflow relation for the spillway was determined from the geometry of the spillway and dam utilizing HEC-1 Dam Safety Version Program

The reservoir stage-storage capacity relationship was computed directly by the conic method, utilizing the HEC-1-DB program. The reservoir surface areas at various elevations were measured by planimeter from a U.S.G.S. Quadrangle topographic map. Reservoir storage capacity included surcharge levels exceeding the top of the dam, and the spillway rating curve was based

on the assumption that the dam remains intact during routing. The spillway rating curve is presented in the Hydrologic Computation, Appendix D.

A breach analysis indicates that the stage of the stream where it crosses Sharrer Road is 0.6 feet higher, due to dam failure from overtopping at 0.4 PMF than it would without failure at 0.4 PMF. This is not likely to jeopardize the road downstream significantly more than without failure. The discharge facility is thus rated "inadequate".

Drawdown calculations indicate that to empty the lake to an elevation of 867 NGVD through the one low-level outlet would take 11 hours, assuming a 2 cfs/square mile inflow. This is considered to be a reasonable drawdown period, and provision of additional outlets should not be considered.

Drawdown calculations indicate that to empty the lake to an elevation of 867 NGVD through the one low-level outlet would take 11 hours, assuming a 2 cfs/square mile inflow. This is considered to be a reasonable drawdown period, and provision of additional outlets should not be considered.

b. Experience Data

No records of reservoir stage or spillway discharge are maintained for this site.

c. Visual Observation

The downstream channel is in good condition. It meanders from the outlet down past the spoil disposal area on the left into a wooded area. The bottom of the channel is rocky and clear of debris. The sides through the disposal area are relatively steep and then flatten out once into the wooded section.

A housing development is located left of the channel above the flood reach, approximately 500 feet downstream from the dam.

The side slopes of the reservoir are moderately steep and do not exhibit signs of instability. A swimming beach is along the right shoreline. The drainage area is wooded and undeveloped.

d. Overtopping Potential

A storm of magnitude equivalent to the SDF would cause overtopping of the dam to a height of 0.35 feet. Computations indicate that the dam can pass approximately 30.5 percent of the PMF without overtopping the dam crest. Since the 1/2 PMF is the Spillway Design Flood (SDF) for this dam, according to the Recommended Guidelines for Safety Inspection of Dams by the Corps of Engineers, the spillway capacity of the dam is assessed as "inadequate".

SECTION 6

6. STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability

a. Visual Observations

There are no signs of distress in the embankment of the Camp Beisler Dam. Flowing water was observed along the downstream toe of slope approximately 100 feet from the left end of the dam. In as much as this section is part of the spoil disposal area, it is possible the flow could be from another source other than seepage from the dam. The heavy growth of brush growing along the upstream slope could pose a threat to stability. The spillways are in good condition.

b. Design and Construction Data

No design computations relating to stability were uncovered during the report preparation phase. No embankment or foundation soil parameters are available for carrying out a conventional stability analysis of the embankment.

c. Operating Records

No operating records are available relating to the stability of the dam.

d. Post-Construction Changes

There are no known post-construction changes since the dam was built in 1971.

e. Static Stability

A static stability analysis was not performed for Camp Beisler Dam because the lack of data on which to base assumptions of material properties within embankment zones might produce misleading results, but based on the findings of the visual inspection, the preliminary assessment of static stability is that it is satisfactory.

f. Seismic Stability

The dam is located in Seismic Zone 1, as defined in Recommended Guidelines for Safety Inspection of Dams, prepared by the Corps of Engineers. In general, projects located in Seismic Zones 0, 1 and 2 may be assumed to present no hazard from earthquake, provided the static stability conditions are satisfactory and conventional safety margins exist, and based on the findings of the visual inspection, the preliminary assessment of the static and seismic stabilities is that they are satisfactory.

SECTION 7

7. ASSESSMENT/REMEDIAL MEASURES

7.1 Dam Assessment

a. Safety

The dam has been inspected visually and a review has been made of the available engineering data. This assessment is subject to the limitations inherent in the visual inspection procedures stipulated by the Corps of Engineers for a Phase 1 report.

Camp Beisler Dam is inadequate because the dam does not have the spillway capacity to pass the SDF, one half of the PMF, without overtopping. Overtopping of the dam carries with it the danger of a likely progressive failure of the dam. The present spillway capacity of the dam is approximately 30.5 percent of the PMF.

No definitive statement pertaining to the safety of the embankment can be made without acquisition of embankment material engineering properties, but based on the findings of the visual inspection, preliminary assessment of the static stability is that it is satisfactory.

b. Adequacy of Information

The information uncovered was adequate to perform hydrologic and hydraulic computations. The data was insufficient to perform even an approximate computation of the stability of the dam. A preliminary assessment of the dam could be made by visual observation only.

c. Urgency

The remedial measures and recommended actions along with a timetable for their completion are detailed below. All recommended action should be conducted under the supervision of an Engineer who is experienced in the design, construction and inspection of dams.

7.2 Remedial Measures

a. Alternatives for Increasing Spillway Capacity

Alternatives for increasing spillway capacity are as follows:

1. Increase the embankment height of the dam thus permitting a higher discharge to pass over the spillway and reducing the possibility of overtopping.

2. Lower the spillway crest elevation.

3. Increase the effective spillway crest length.

4. A combination of any of the above alternatives.

b. Recommendations

1. Carry out a more precise hydrologic and hydraulic analysis of the dam within twelve months, to determine the need and type of mitigating measures necessary. If required, conduct a study of the means of increasing spillway discharge capacity and develop alternative schemes for construction. This should include the installation of headwater and tailwater gages. The ability of the dam to withstand overtopping should also be studied.

2. Determine if observed flow is seepage from the dam and if so, it should be monitored monthly to determine its volume and whether it presents a problem to the safety of the dam.

3. Construct a concrete headwall and apron at the outlet end of the discharge pipe. Also, attempt to locate the toe drain outlets and if found provide for their discharge through the headwall. This work should be started within twelve months.

4. All brush should be removed from the upstream slope to avoid any problems that may develop from roots. The slope should then be reseeded to develop a growth of grass for surface erosion protection. This should be done within twelve months.

5. Determine if low-level outlet gate is operable, and if not institute remedial action to make it operable within twelve months.

The following additional action is recommended:

The owner should develop an emergency action plan (if one is not already available) outlining actions to be taken by the operator to minimize downstream effects of an emergency and establish a flood warning system for the downstream communities within three months.

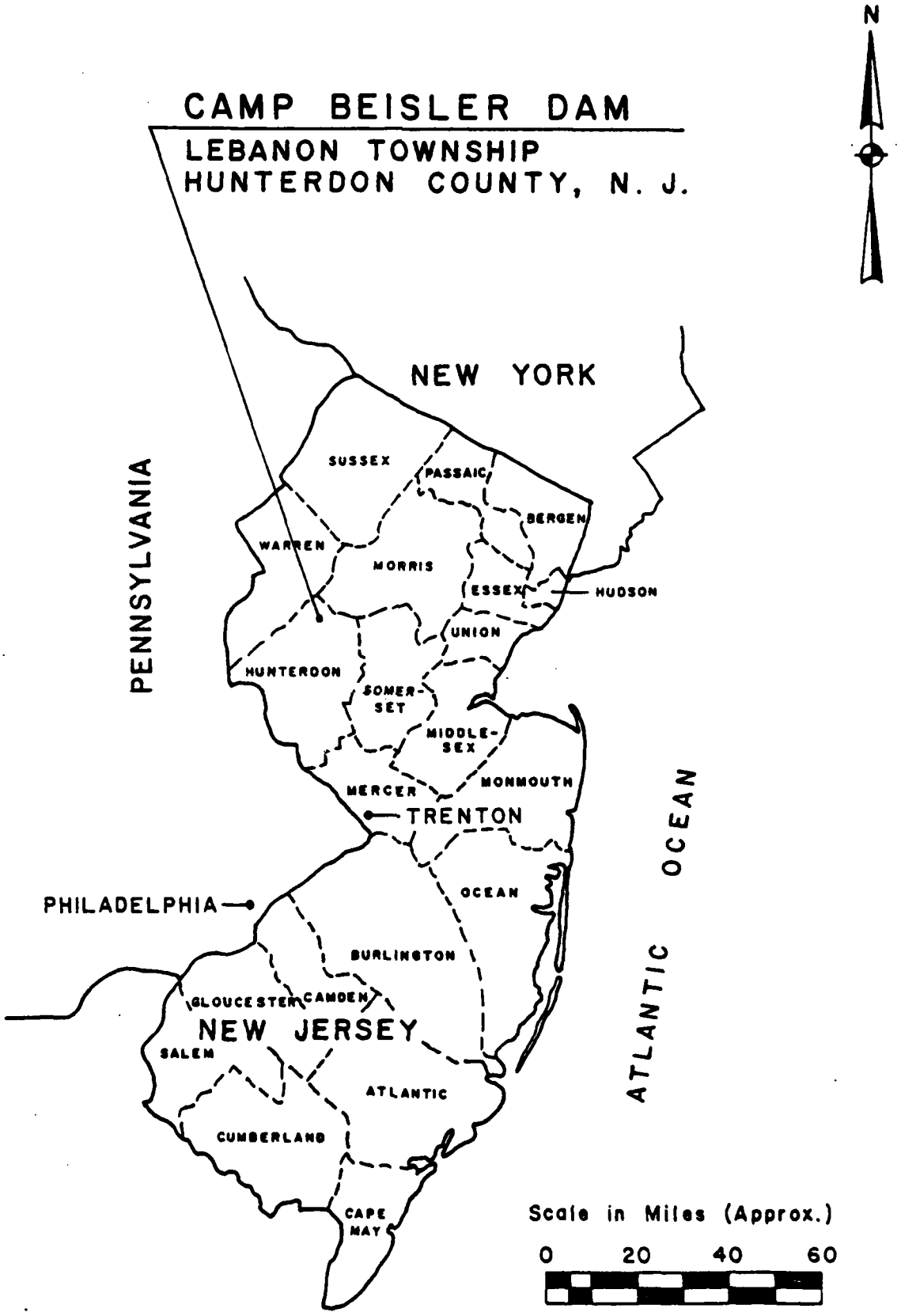
c. O & M Procedures

The owner should develop, within one (1) year after formal approval of the report, written operating procedures and a periodic maintenance plan to insure the safety of the dam.

PLATES

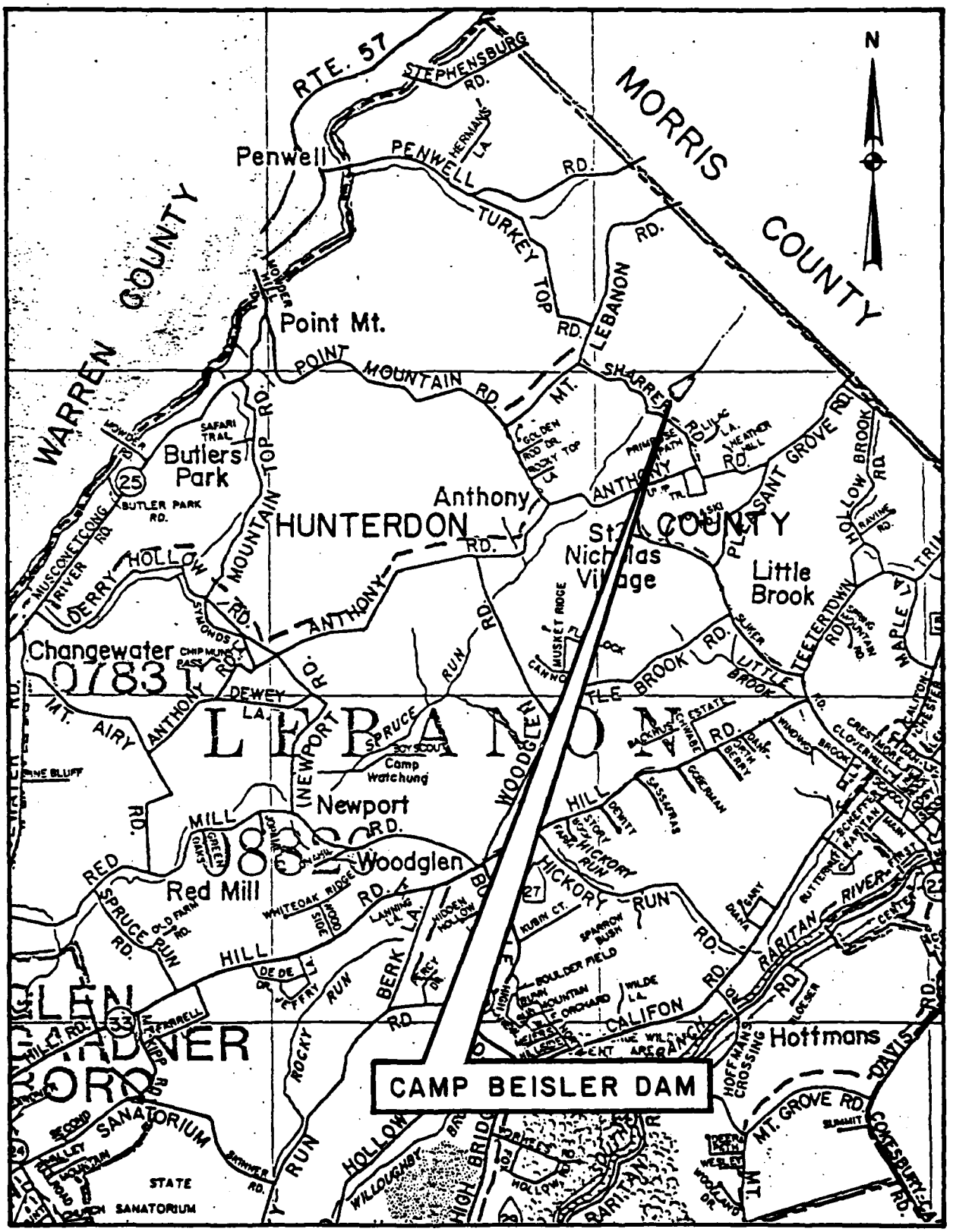
CAMP BEISLER DAM

LEBANON TOWNSHIP
HUNTERDON COUNTY, N. J.



KEY MAP

PLATE I

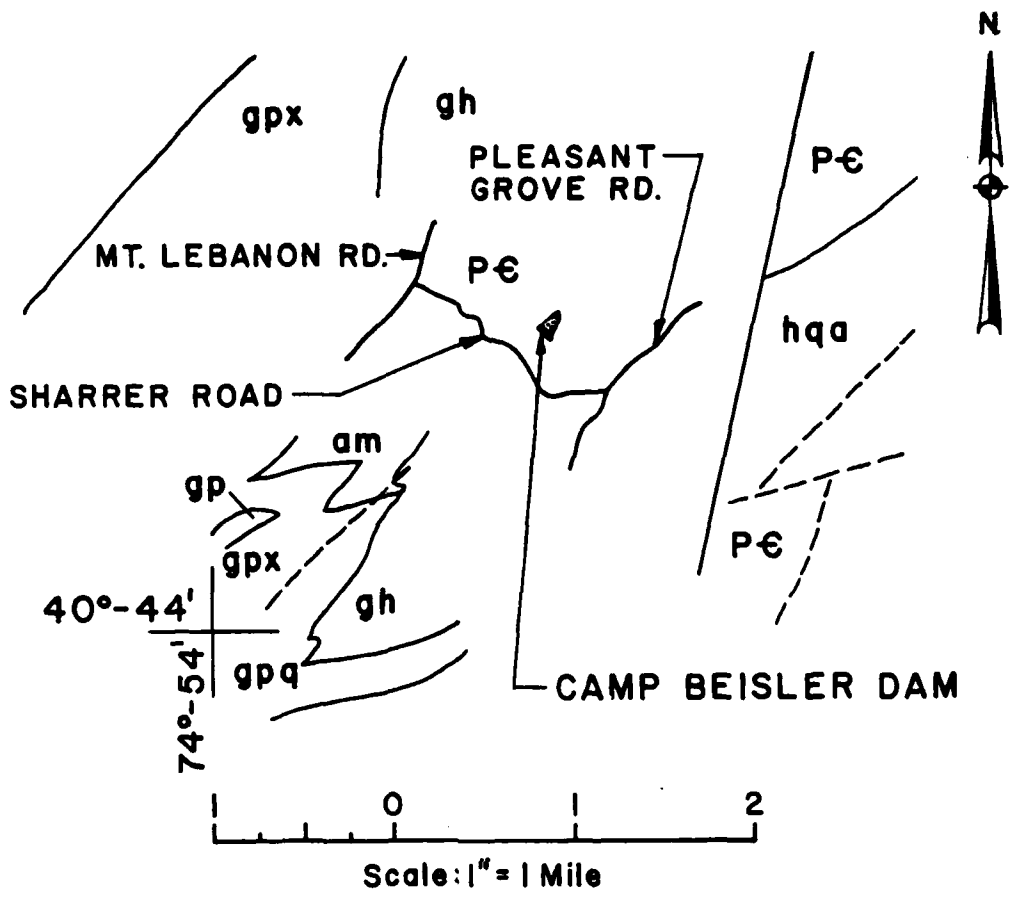


Scale in Miles (Approx.)

0 1 2 3

VICINITY MAP

PLATE 2



LEGEND

PRE-CAMBRIAN

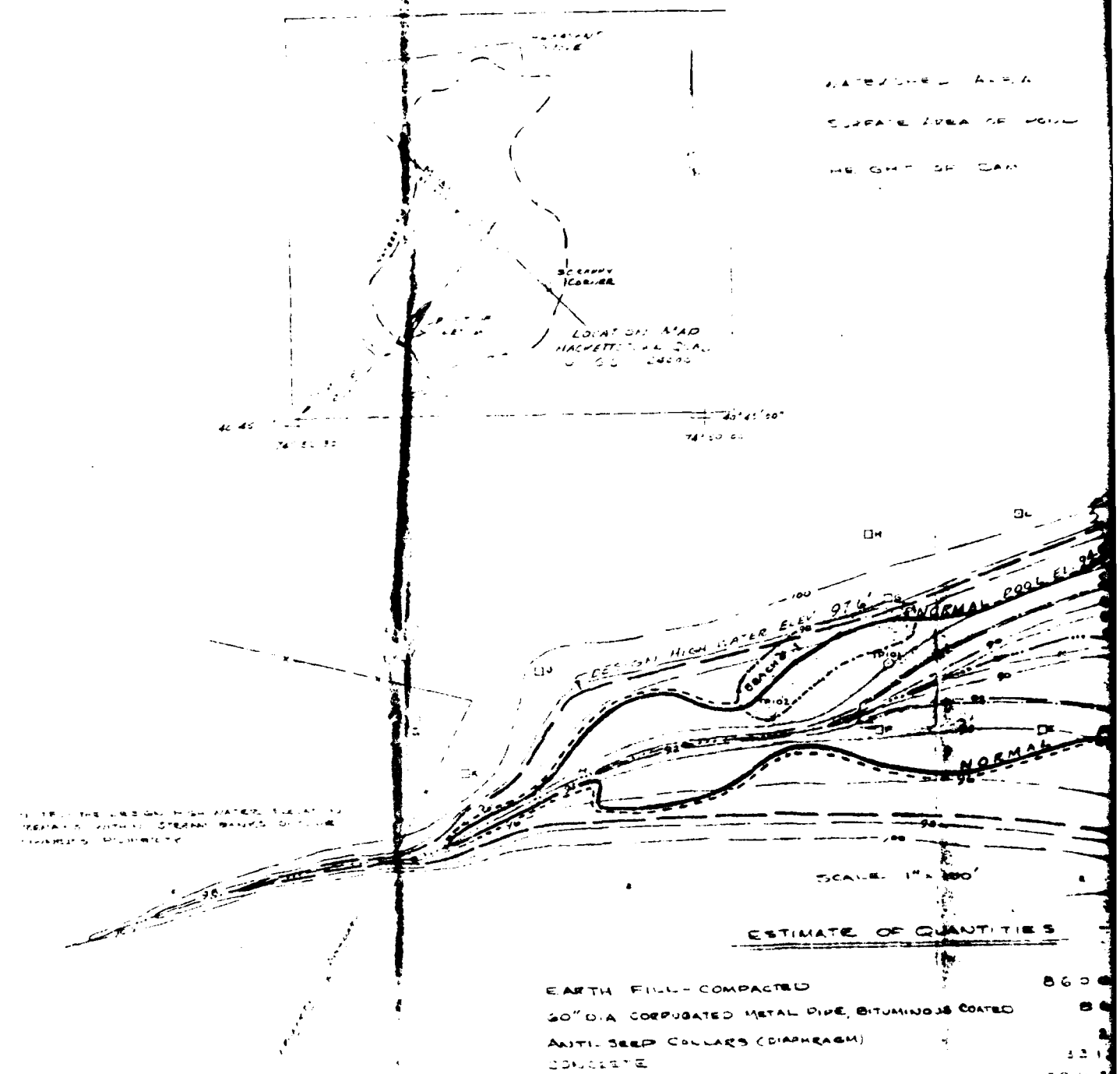
P€	Undifferentiated Pre-Cambrian
am	Amphibolite
gh	Hornblende Granite
gp	Pyroxene Granite
gpq	Plagioclase-Quartz Granite
gpx	Pyroxene Gneiss
hqa	Hypersthene-Quartz-Andesine Gneiss

FAULT

(Dashed Where Inferred)

GEOLOGIC MAP
CAMP BEISLER DAM

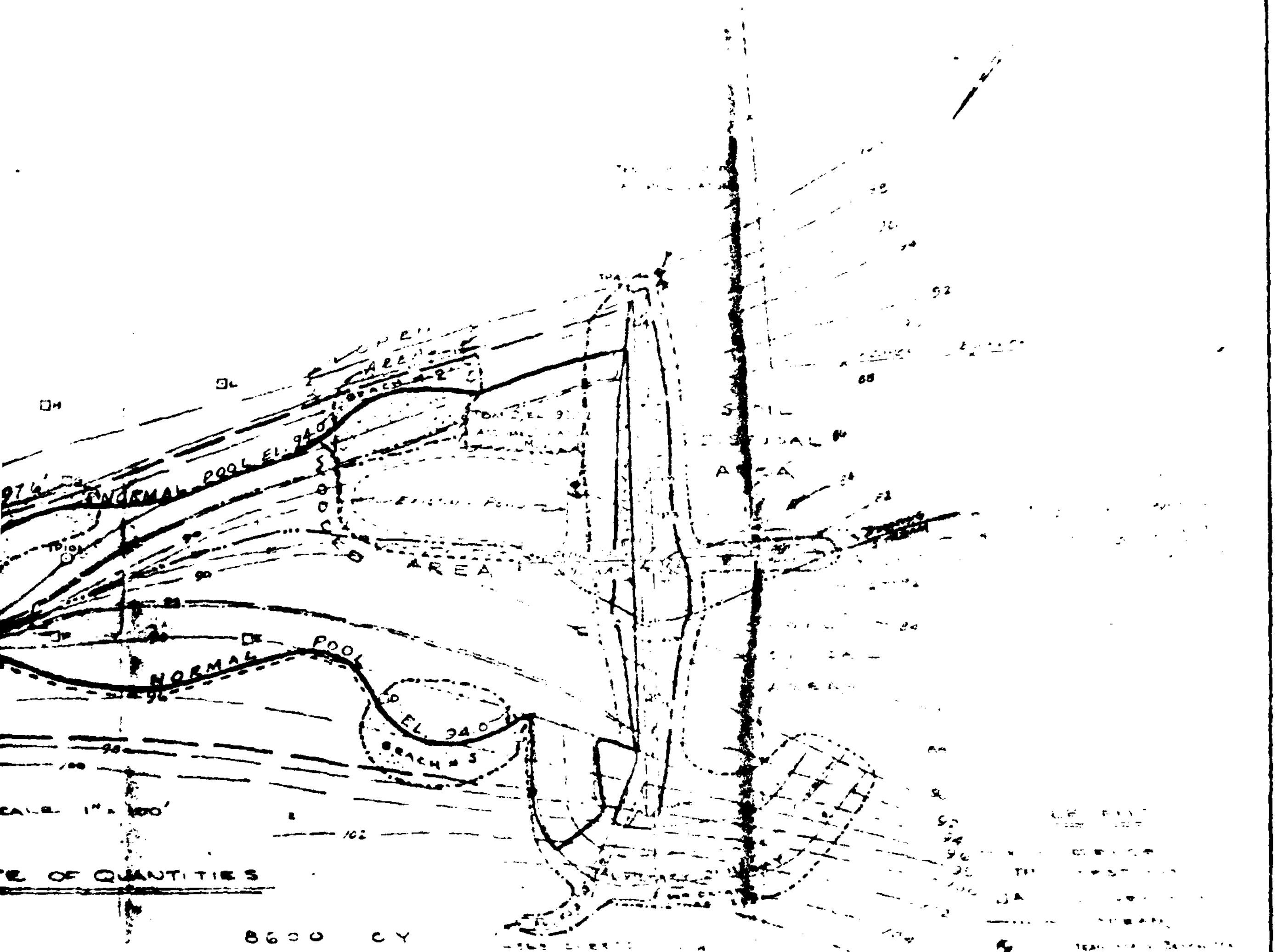
PLATE 3



ESTIMATE OF QUANTITIES

EARTH FILL - COMPACTED	860
30" DIA CORRUGATED METAL PIPE, BITUMINOUS COATED	8
ANTI-SEEP COLLARS (DIAPHRAGM)	
CONCRETE	33
	2P

...atershed Area	...
...urface Area of Pond	7 acres
...eight of Dam	16.5 feet



...e of Quantities

	8600	C.Y.
...e, Bituminous Coated	86	L.F.
...am)	2	Units
	33...3	C.Y.
	38... 26	...
	25	...
	75	C.Y.
... Ctd	40	...
	2	
	10...	
	3.25	

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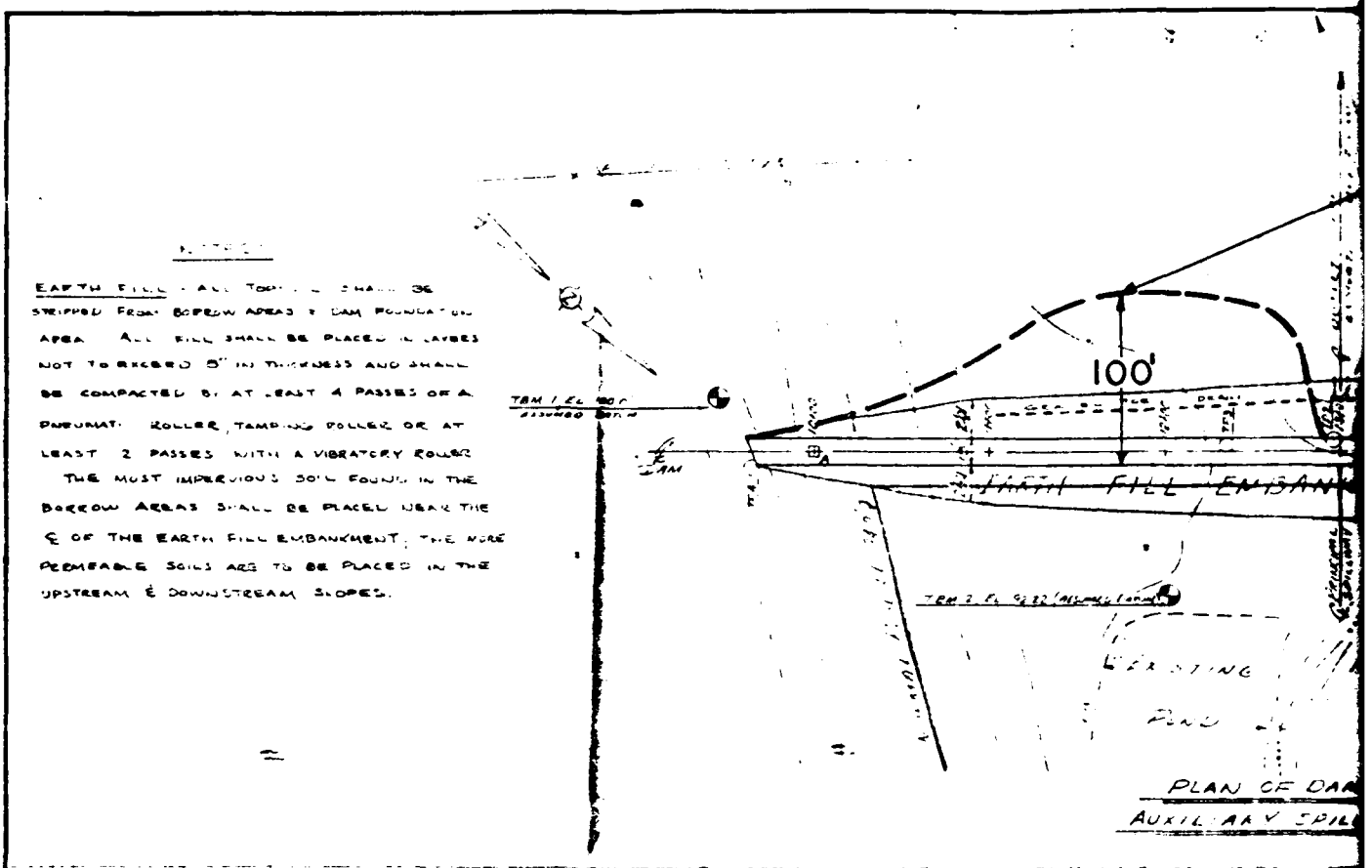
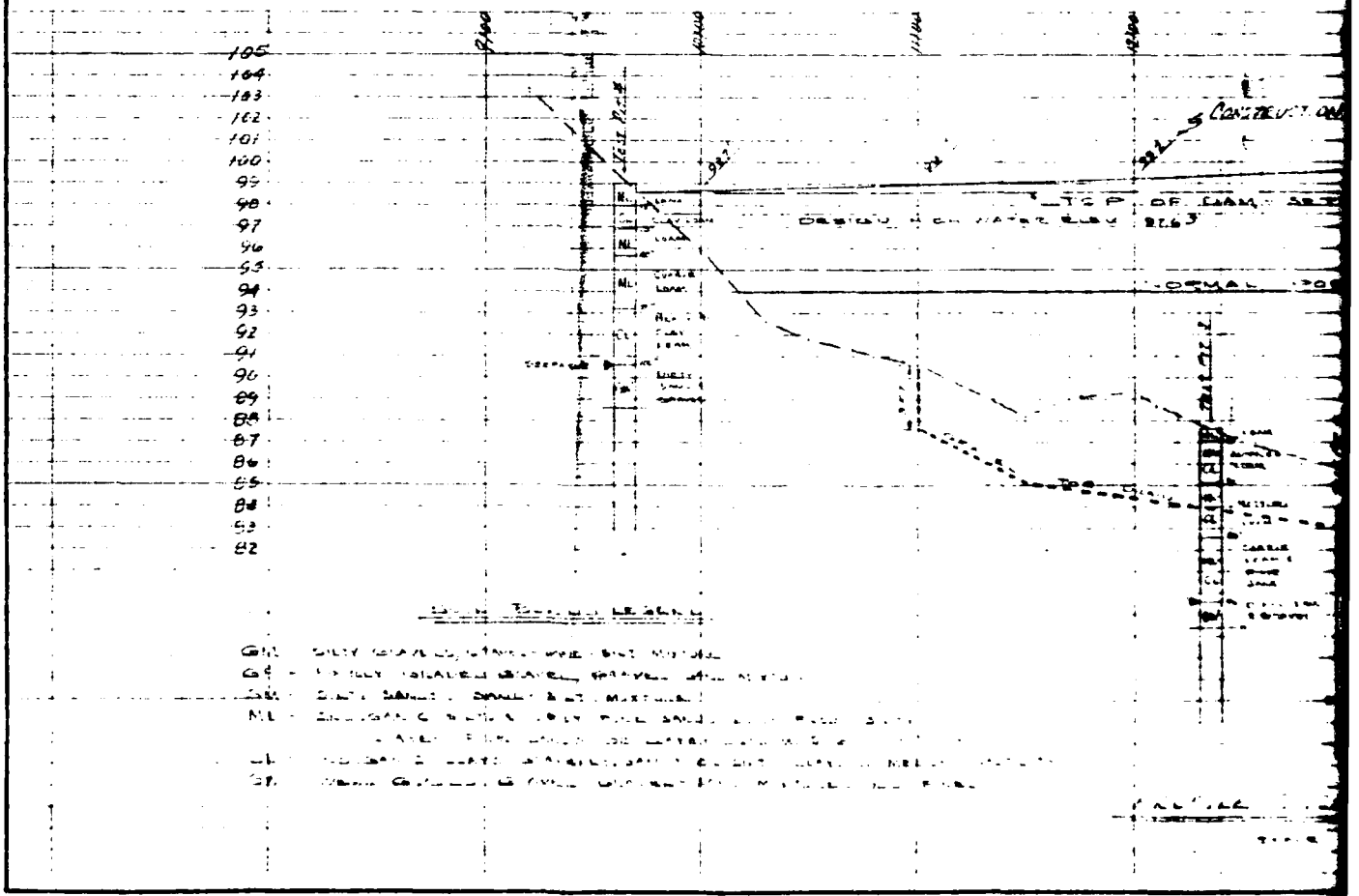
PLATE 4

NOTES:

EARTH FILL - ALL TOPSOIL SHALL BE STRIPPED FROM BORROW AREAS & DAM FOUNDATION AREA. ALL FILL SHALL BE PLACED IN LAYERS NOT TO EXCEED 8" IN THICKNESS AND SHALL BE COMPACTED BY AT LEAST 4 PASSES OF A PNEUMATIC ROLLER, TAMPING ROLLER OR AT LEAST 2 PASSES WITH A VIBRATORY ROLLER. THE MOST IMPERVIOUS SOILS FOUND IN THE BORROW AREAS SHALL BE PLACED NEAR THE ℄ OF THE EARTH FILL EMBANKMENT. THE MORE PERMEABLE SOILS ARE TO BE PLACED IN THE UPSTREAM & DOWNSTREAM SLOPES.





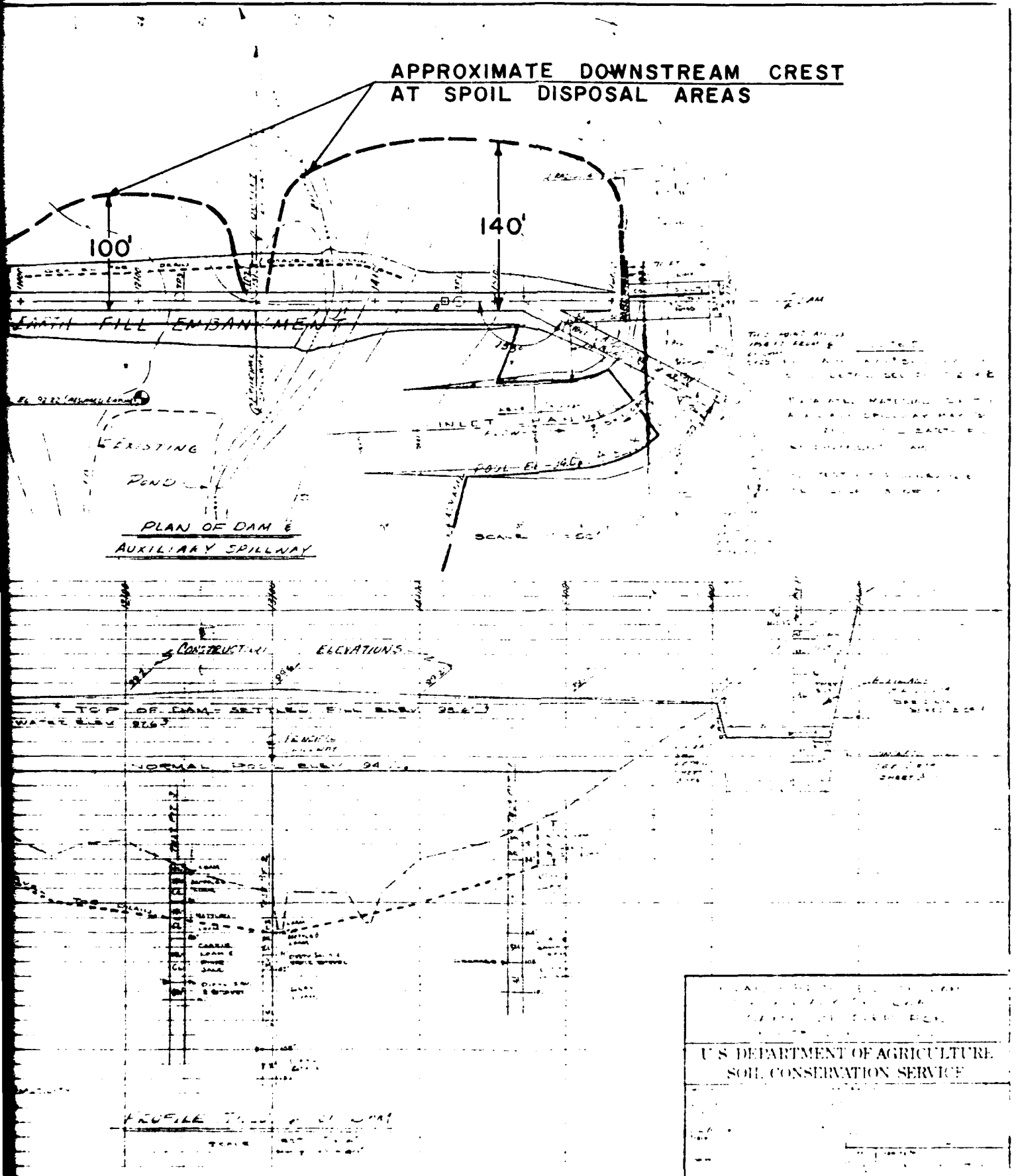


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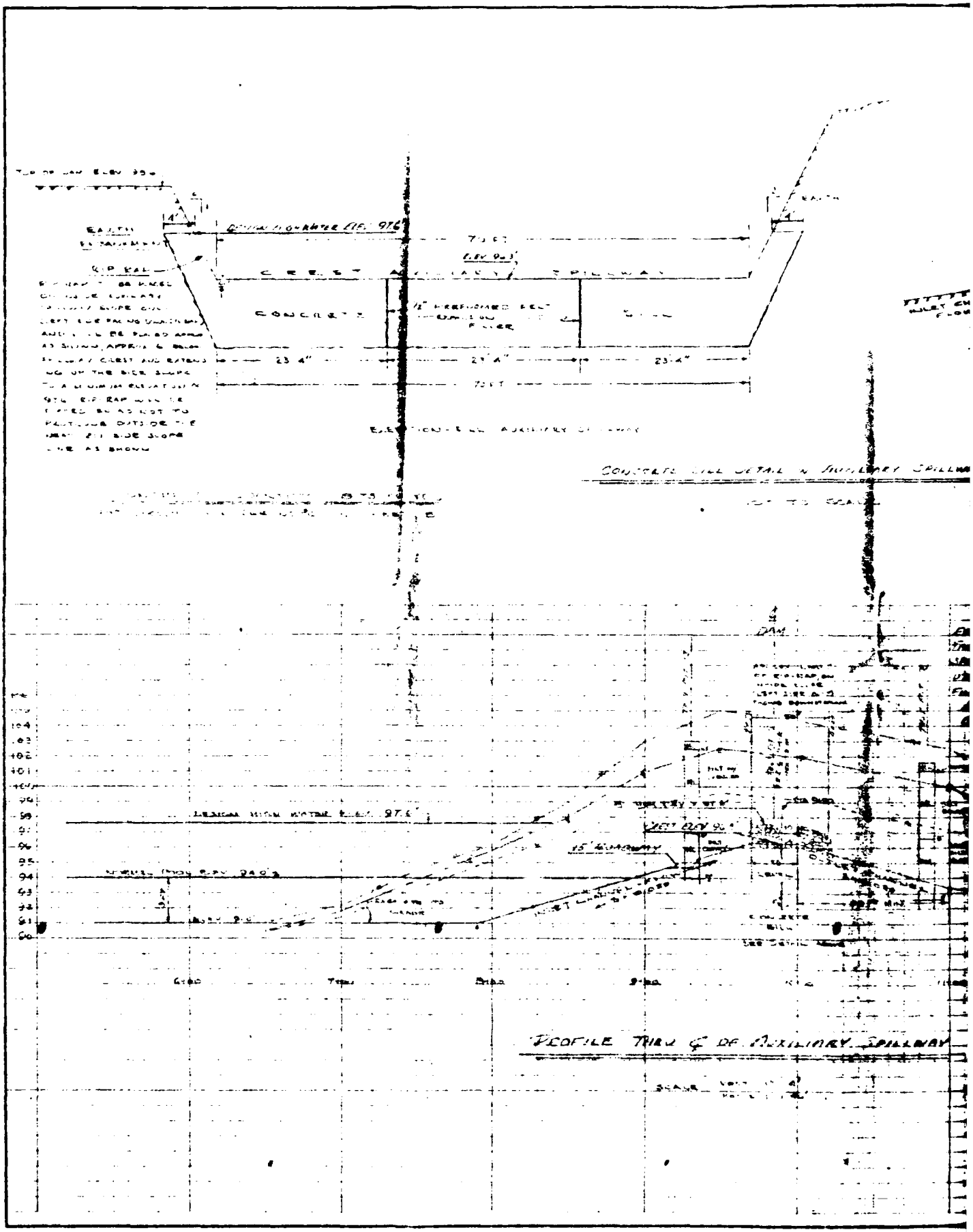
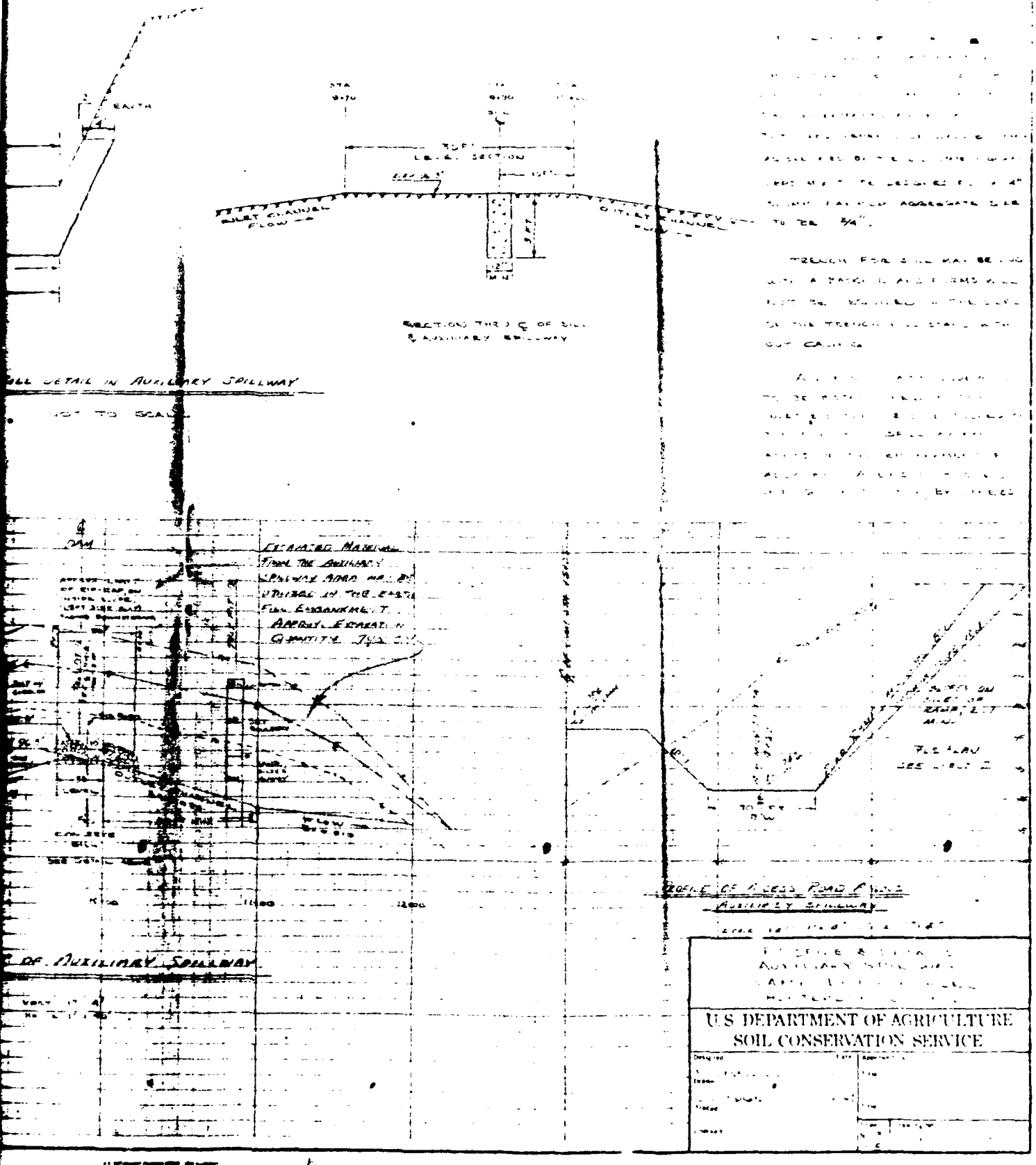
PLATE 5


CREST
CONCRETE
23'-4"
23'-4"
23'-4"
73'-0"
DAM
SPILLWAY
PROFILE THRU ℄ OF AUXILIARY SPILLWAY



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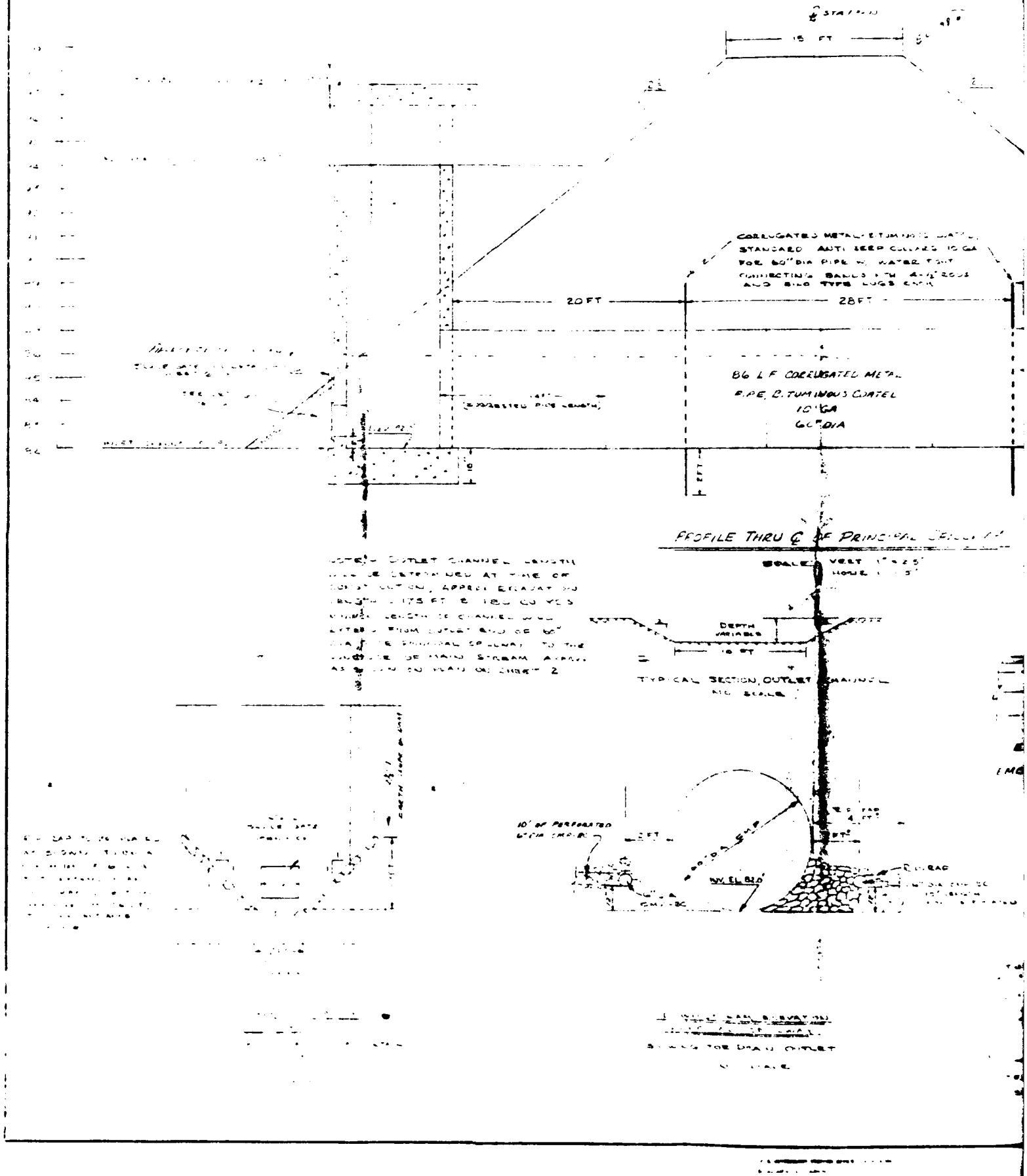
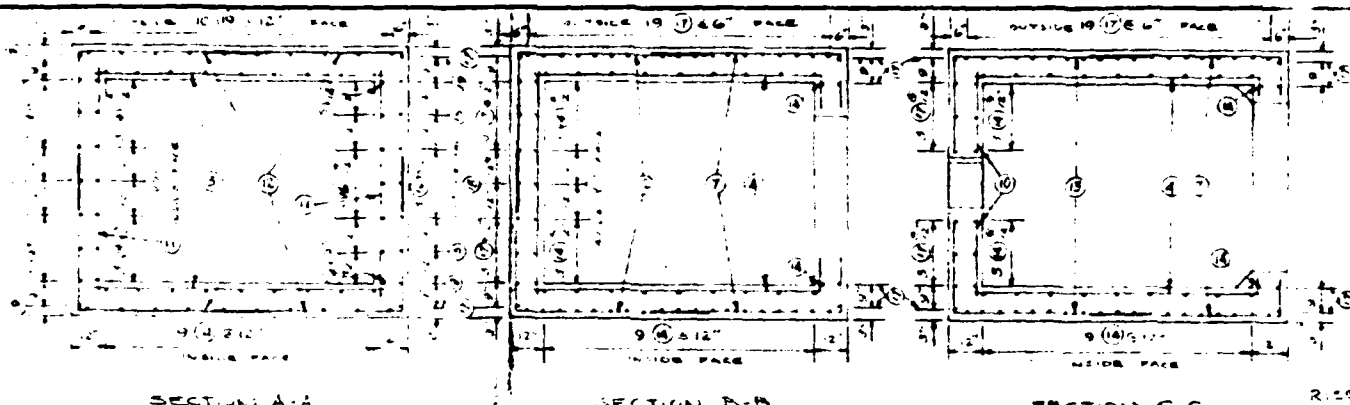
Form SCS-117 (November 19

PLATE 6


15 FT
20FT
28FT
CORRUGATED METAL BITUMINOUS COATED
STANDARD ANTI SEEP COLLARS 10 GA
FOR 60" DIA PIPE W. WATER TIGHT
CONNECTING BANDS WITH 4-1/2" SQUARE
AND BOLT TYPE LUGS EACH
86 L F CORRUGATED METAL
PIPE, BITUMINOUS COATED
10 GA
60" DIA
PROFILE THRU ℄ OF PRINCIPAL SPILLWAY
SCALE: VERT 1" = 2.5'
HORIZ 1" = 5'
DEPTH VARIABLE
10 FT
TYPICAL SECTION, OUTLET CHANNEL
NO SCALE
10' OF PERFORATED
W. EL 810'
RIP-RAP

15 FT
28FT
86 L F CORRUGATED METAL
PIPE, BITUMINOUS COATED
10 GA
60" DIA
GRAVEL TOE DRAIN
TRENCH TO FOLLOW APPROX
GROUND LINE (FT) OR ALONG
3FT DEEP & 2 FT WIDE
PROFILE THRU ℄ OF PRINCIPAL SPILLWAY
SECTION, OUTLET
NO SCALE
EARTH
EMBANKMENT
PLAN OF TOE DRAIN OUTLET
NO SCALE
CAMP BEISLER POND
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PLATE 7

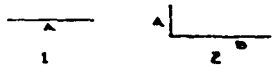


SECTION A-A

SECTION B-B

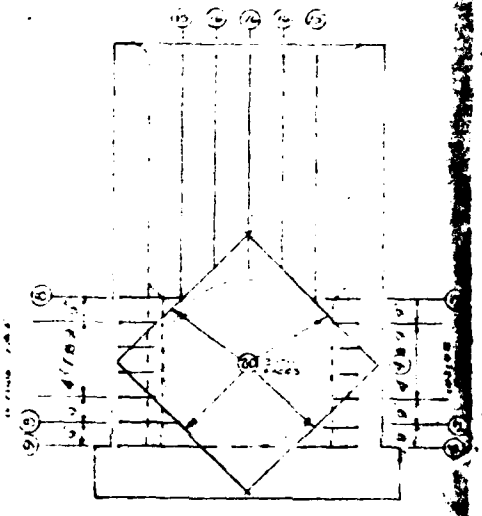
SECTION C-C

BAR TYPES

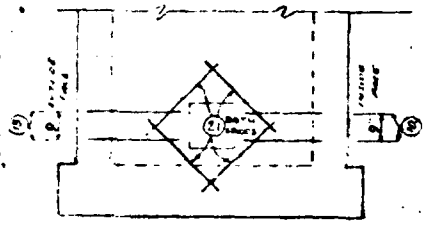


SPLICE LEUGTH

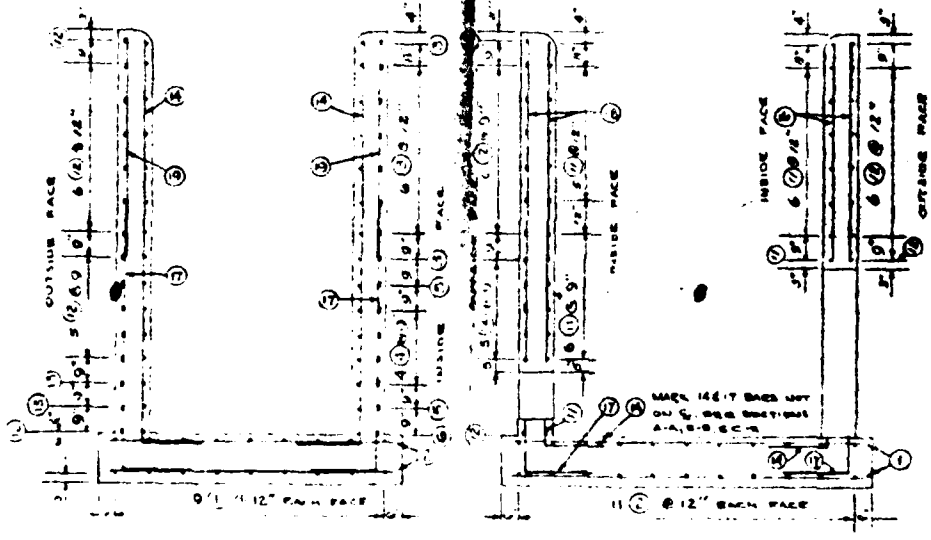
130 6 BARS 19" MINIMUM



SECTION G-G



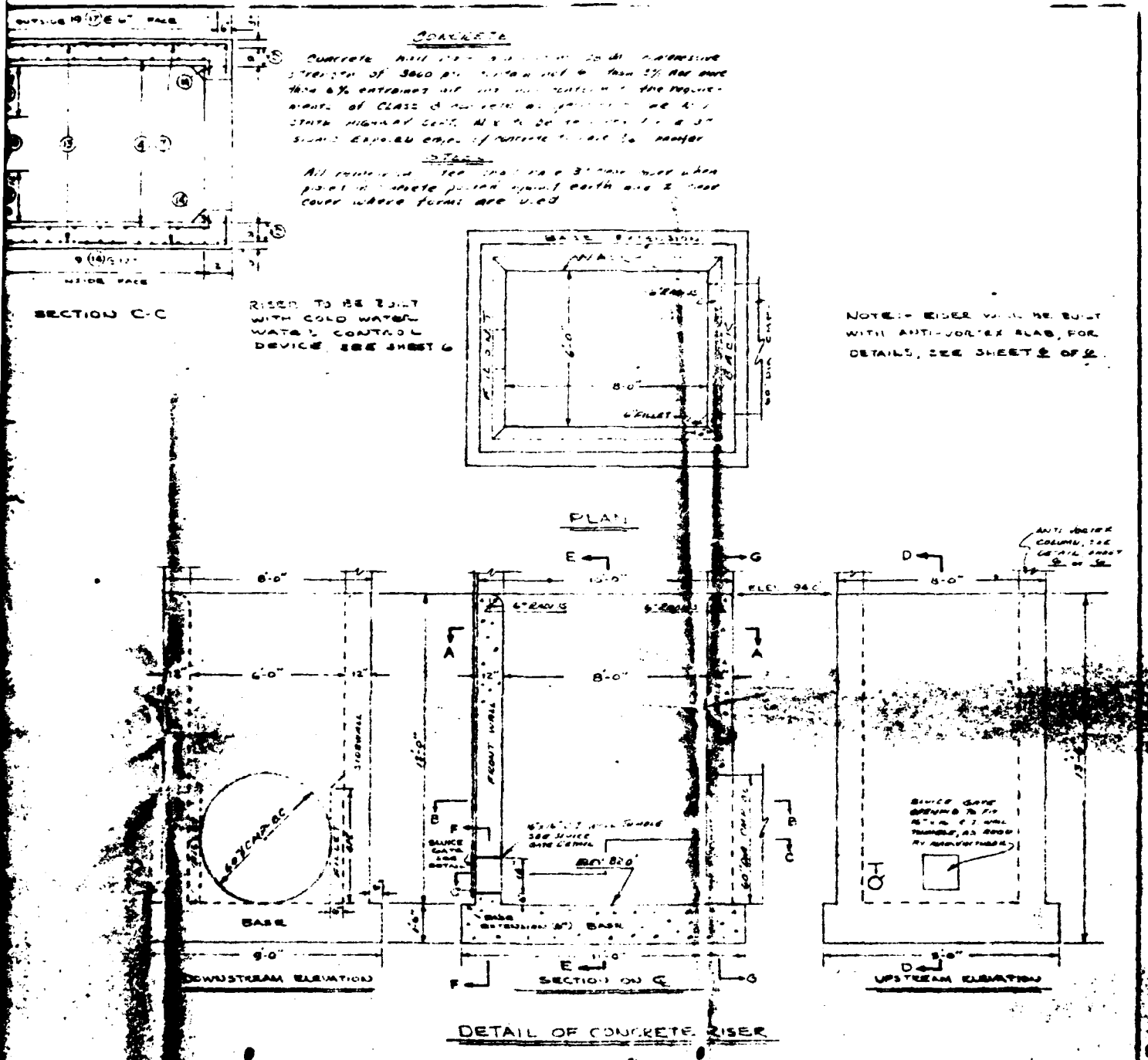
SECTION F-F



SECTION D-D

RISER - STEEL SCHE

MARK	LOCATION	SIZE	QUAN	LENGTH	TYPE
1	BASE	6	18	10'5	1
2	"	6	22	8'5	1
3		6	16	6'75	1
4	" "	6	6	9'0	2
5	" "	5	4	3'9	2
6	" "	5	2	10'5	2
7	" "	5	6	6'75	2
8	" "	5	4	7'5	2
9	" "	5	2	11'5	2
10	SHOWALL	5	4	2'5	1
11	" "	5	27	6'75	1
12	" "	5	62	10'50	2
13	" "	6	9	6'75	2
14	" "	6	24	3'75	2
15	" "	5	4	7'25	2
16	" "	6	6	6'10	1
17	" "	5	30	10'50	2
18		5	2	11'0	1
19		5	38	5'5	1
20		5	3	5'5	1
21		5	11	5'5	



RISER - STEEL SCHEDULE

MARK	LOCATION	SIZE	QUAN.	LENGTH	TYPE	A	B	TOTAL FEET
1	BASE	6	18	10.5	1	10-6		189.00
2	"	6	32	8.5	1	8-6		272.00
3	SIDEWALL & ANTI-VORTEX SLAB	6	16	8.75	1	8-9		140.00
4	" " "	6	8	9.0	2	9-6	8-6	72.00
5	" " "	6	4	3.5	2	1-0	8-6	30.00
6	" " "	6	2	10.5	2	2-0	9-6	21.00
7	" " "	6	8	6.75	2	1-8	8-9	89.00
8	" " "	6	4	7.5	2	1-9	5-9	30.00
9	" " "	6	2	11.5	2	2-9	8-9	17.00
10	SIDEWALL & ANTI-VORTEX SLAB	5	4	2.5	1	2-6		10.00
11	" " "	5	21	6.75	1	6-9		141.75
12	" " "	5	62	10.50	2	9-9	5-9	991.00
13	" " "	6	4	8.75	2	3-0	5-9	35.00
14	" " "	6	26	13.75	2	1-9	4-0	357.50
15	" " "	5	4	7.25	2	7-3		47.00
16	" " "	6	6	9.50	1	9-6		57.00
17	" " "	5	50	10.00	2	9-6	8-6	1000.00
18	" " "	6	7	11.0	1	11-0		154.00
19	" " "	6	36	13.5	1	13-6		486.00
20	SIDEWALL & ANTI-VORTEX SLAB	5	9	5.5	1	5-6		49.50
21	" " "	5	8	3.0	1	3-0		24.00

CONCRETE QUANTITY

RISER ONLY = 18.93 CY

RISER STEEL SUMMARY

	FEET	POUNDS
NO 6 BARS	376.00	564.75
NO 5 BARS	2220.25	2315.72

NOTE: THIS SUMMARY DOES NOT INCLUDE STEEL FOR ANTI-VORTEX SLAB SEE SHEET 5 OF 8

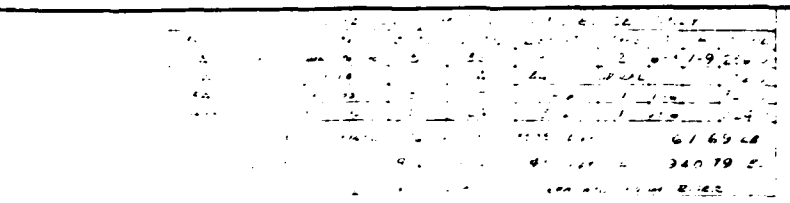
CONCRETE RISER & STEEL DETAIL
CAMP BEISLER POND
HUNTERDON COUNTY, N. J.

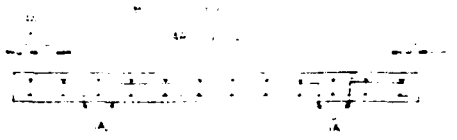
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

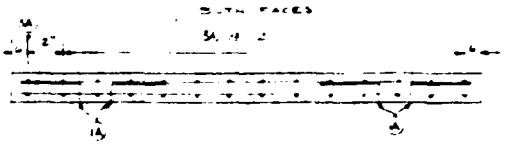
Designed R.H. MAYNARD 2-67
Drawn J.L. ANDERSON 2-67
Traced
Checked
Approved by
Title
Sheet No. 5 of 8
Drawing No. NJ-01-718

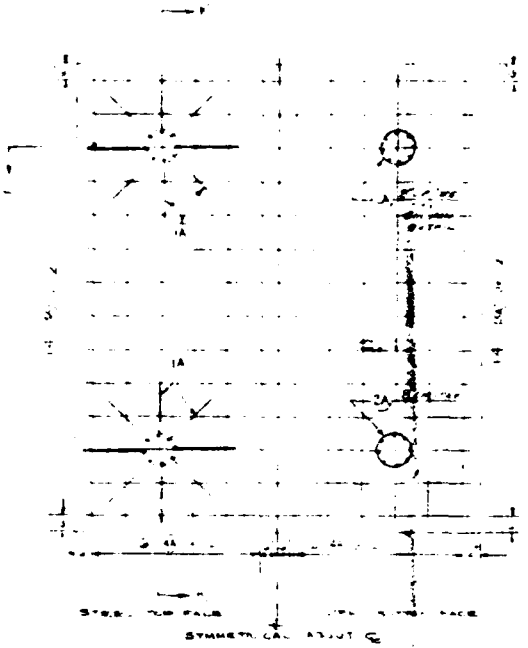
Form SCS-313 (November 1966)

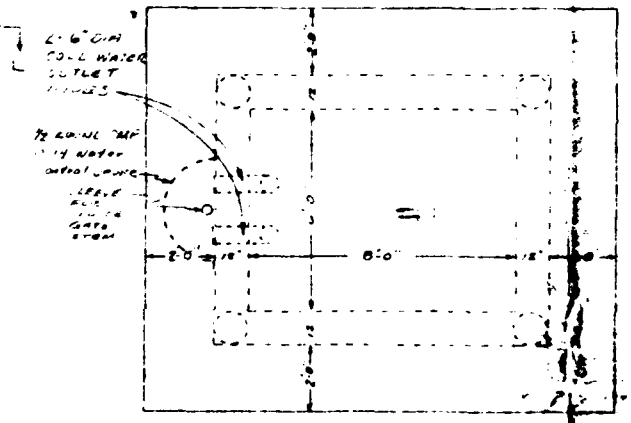
PLATE 8



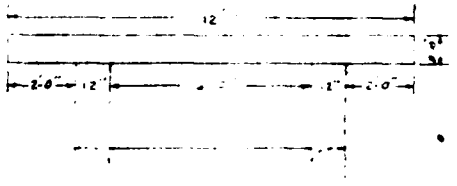


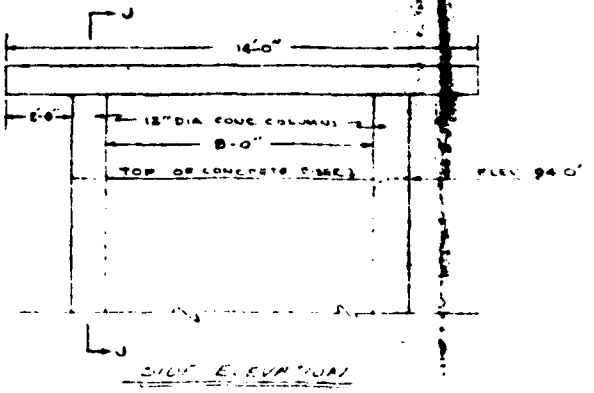




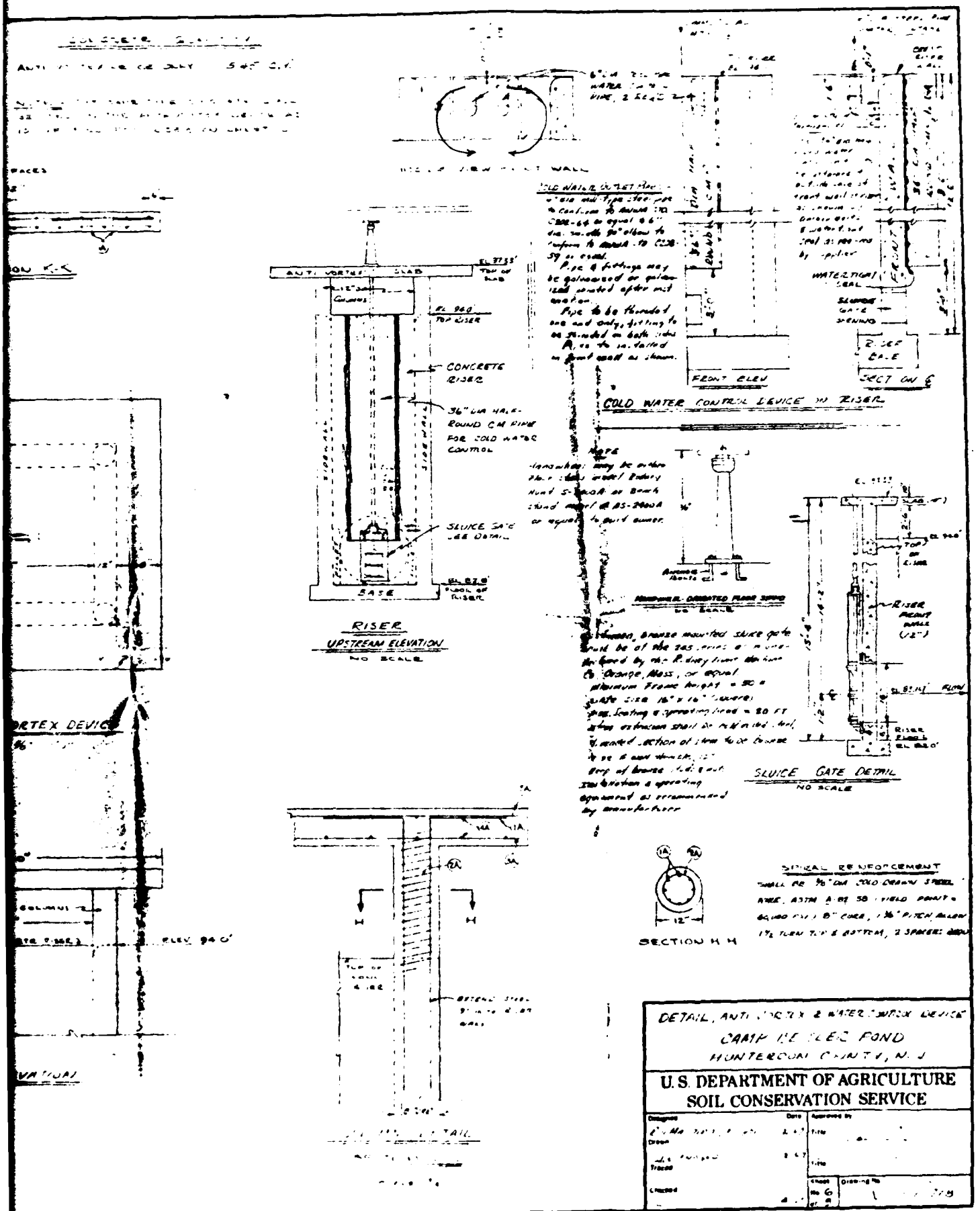


FLAN-ANTI VORTEX DEVIC





SHOT E. EVATION



Form SCS 313 (November 1965)

PLATE 9

APPENDIX A

CHECK LIST - VISUAL OBSERVATIONS

CHECK LIST - ENGINEERING, CONSTRUCTION MAINTENANCE DATA

CHECK LIST
VISUAL INSPECTION
PHASE 1

Name Dam Camp Beisler Dam County Hunterdon State New Jersey Coordinators NJ-DEP

Date(s) Inspection January 12,1981 Weather Clear Temperature 0°F
February 3, 1981 Clear 15°F

Pool Elevation at Time of Inspection 879.2 NGVD Tailwater at Time of Inspection 867.5 NGVD

Inspection Personnel:

January 12, 1981

William Birch
Thomas Moroney
Joseph Sirianni (Recorder)

February 3, 1981

Thomas Moroney

OWNER/REPRESENTATIVE

January 12, 1981

Mark Burkhardt
Camp Director
Beisler Camping & Retreat Center
R.D.I. Box 106
Port Murray, NJ 07865

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS AND RECOMMENDATIONS
SURFACE CRACKS	None noticed. Embankment covered with snow.	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	None noticed.	
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	None noticed. Slopes are grass covered and in good condition.	
VERTICAL & HORIZONTAL ALIGNMENT OF THE CREST	Vertical alignment is good. Horizontal alignment of upstream edge of crest is good. Downstream edge of crest is irregular due to left and right sides of the discharge channel being used as spoil disposal areas during construction.	
RIPRAP FAILURES	None	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS AND RECOMMENDATIONS
EARTH EMBANKMENT	Embankment is grass covered with a heavy growth of brush on the upstream face.	Remove brush.
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Junction of the embankment and the auxiliary spillway is in good condition.	
ANY NOTICEABLE SEEPAGE	Minor flow was observed at the downstream toe approximately 100 feet from left end of dam. Since section is in the spoil disposal area the source of water may be other than seepage from the dam.	Try and determine if flow is seepage from dam. If so, monitor for clearness and quantity.
STAFF GAGE AND RECORDER	None	
DRAINS	Plans call for toe drains left and right of low-level outlet. Outlets for drains were not found.	Determine the location of the outlets.

OUTLETS WORKS.

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS AND RECOMMENDATIONS
CRACKING & SPALLING OF CONCRETE SURFACES IN STILLING BASIN	N/A - Main spillway (also outlet works) discharges directly into downstream channel. Auxiliary spillway discharges onto existing ground at embankment toe and then into downstream channel.	
INTAKE STRUCTURE	Main spillway is concrete drop inlet with a sluice gate and is in good condition with only minor spalling of concrete. N/A to auxiliary spillway.	
OUTLET STRUCTURE	A 60-inch corrugated metal pipe in good condition. There is no headwall at outlet end of pipe. Riprap of slope along sides of pipe is missing. Operation of the sluice gate was not performed as the handwheel was missing. The owner's representative stated the gate is not use.	Provide concrete headwall and apron at outlet end. Check sluice gate to determine if operable.
OUTLET FACILITIES	None	
EMERGENCY GATE	None	

UNGATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS AND RECOMMENDATIONS
CONCRETE WEIR	Main spillway is concrete drop inlet with a sluice gate and two-6-inch steel pipes cold water outlets. The spillway is in good condition with only minor spalling. Auxiliary spillway is a grass channel, with concrete sill. There is one crack in crest approximately 25 feet from left end.	
APPROACH CHANNEL	The lake is the approach channel for both spillways.	
DISCHARGE CHANNEL	Main spillway: 60-inch corrugated metal pipe, in good condition, is the discharge channel and low-level outlet. Auxiliary spillway: The existing ground along the downstream toe of the embankment is the discharge channel and is in good condition.	
BRIDGE AND PIERS	4 - 12-inch concrete columns supporting the concrete anti-vortex cover for the main spillway. Columns and cover are in good condition. N/A for auxiliary spillway	

INSTRUMENTATION

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS AND RECOMMENDATIONS
MONUMENTATION/SURVEYS None		
OBSERVATION WELLS None		
WEIRS None		
PIEZOMETERS None		
OTHER None		

RESERVOIR

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS AND RECOMMENDATIONS
SLOPES	Moderately steep and wooded. A swimming area is along the right shore line. There is no indication of slope instability.	
SEDIMENTATION	None observed. Lake covered with ice and snow.	

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS AND RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	Channel meanders from outlet past spoil disposal section into a wooded area. The bottom is rocky with no debris.	
SLOPES	The slopes of the channel through the spoil disposa l section are moderately steep with brush growing on the banks. Also, there is some erosion along the right bank. Slopes in the wooded area are flat.	
APPROXIMATE NUMBER OF HOMES AND POPULATION	A housing development with more than a dozen homes is located left of the downstream channel approximately 500 feet downstream of the dam. The homes are above the flood plain.	

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION

ITEM	REMARKS
PLAN OF DAM	Available on microfilm at NJ Department of Environmental Protection (NJ-DEP), 1474 Prospect Street, P.O. Box CN-029, Trenton, NJ 08625 Available at U.S. Department of Agriculture Soil Conservation Service (SCS) 1370 Hamilton Street, Somerset, NJ 08873
REGIONAL VICINITY MAP	Available. Hunterdon County Map and U.S.G.S. Quadrangle sheet for Hackettstown, N.J.
CONSTRUCTION HISTORY	No formal history exists, but can deduced from available microfilm at NJ-DEP.
TYPICAL SECTIONS OF DAM	Available on microfilm at NJ-DEP and SCS files.
HYDROLOGIC/HYDRAULIC DATA	Limited data available at NJ-DEP and SCS files.
OUTLETS - PLAN	Available on microfilm, NJ-DEP and SCS files.
- DETAILS	Available on microfilm, NJ-DEP and SCS files.
- CONSTRAINTS	None.
- DISCHARGE RATINGS	Not available.
RAINFALL / RESERVOIR RECORDS	Not available.

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
(continued)

ITEM	REMARKS
DESIGN REPORTS	None available.
GEOLOGY REPORTS	Available U.S.G.S. Geologic Overlay Sheet for Hunterdon County and Engineering Soils Survey of New Jersey, Report No. 6 - Hunterdon County, by Rutgers University (New Brunswick, NJ).
DESIGN COMPUTATIONS HYDROLOGY & HYDRAULICS	Limited data available on microfilm, NJ-DEP and SCS files.
DAM STABILITY SEEPAGE STUDIES	None available.
MATERIALS INVESTIGATIONS BORING RECORDS	Test pit results available on microfilm, NJ-DEP and SCS files.
LABORATORY FIELD	None available.
POST-CONSTRUCTION SURVEYS OF DAM	None.
BORROW SOURCES	Unknown.
SPILLWAY PLAN - SECTIONS - DETAILS	Available on microfilm, NJ-DEP and SCS files.

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
(continued)

ITEM	REMARKS
OPERATING EQUIPMENT PLANS AND DETAILS	Available on microfilm, NJ-DEP and SCS files.
MONITORING SYSTEMS	None available.
MODIFICATIONS	None
HIGH POOL RECORDS	Not kept.
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	Existing condition report, July 1973 Available on microfilm, NJ-DEP.
PRIOR ACCIDENTS OF FAILURE OF DAM - DESCRIPTION - REPORTS	None known to exist.
MAINTENANCE OPERATION RECORDS	None known to exist.

APPENDIX B

PHOTOGRAPHS

(Taken on January 12 and February 3, 1981)

Photo 1 - View of main spillway from top of dam. (Photo taken on January 12, 1981.)

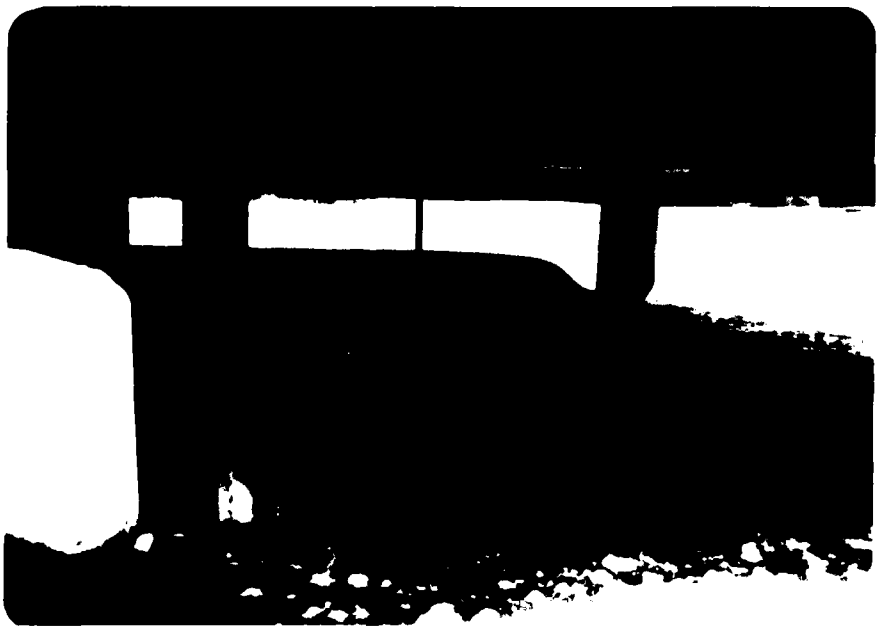


Photo 2 - View of main spillway showing two 6-inch steel cold water outlets. (Photo taken on January 12, 1981.)

Photo 3 - View of auxiliary spillway approach channel from right end of dam. Note concrete sill wall lower right of photo. (Photo taken on February 3, 1981)

Photo 4 - View of auxiliary spillway discharge channel along toe of downstream slope looking from top of embankment toward right end of dam. (Photo taken on January 12, 1981.)

Photo 5 - View of upstream slope from left end of dam. Note growth of brush along slope. (Photo taken on February 3, 1981.)

Photo 6 - View of downstream slope from left end of dam. Heavy area of grass in left center is the location of the discharge channel. (Photo taken on February 3, 1981.)

Photo 7 - View of downstream channel taken from top of dam (Photo taken on January 12, 1981.)

Photo 8 - View of low-level outlet discharge. (Photo taken on February 3, 1981.)

Photo 9 - View of discharge channel from top of embankment looking toward left spoil disposal area. Note houses in upper center of photo. (Photo taken on January 12, 1981.)

Photo 10 - View of downstream channel in wooded area. (Photo taken on January 12, 1981.)

APPENDIX C

SUMMARY OF ENGINEERING DATA

CHECK LIST
HYDROLOGIC AND HYDRAULIC DATA
ENGINEERING DATA

Name of Dam: CAMP BEISLER DAM

Drainage Area Characteristics: 1.21 square miles

Elevation Top Normal Pool (Storage Capacity): 879 NGVD (20 acre feet)

Elevation Top Flood Control Pool (Storage Capacity): N/A

Elevation Maximum Design Pool: 884.45 NGVD (SDF pool: 65 acre-feet)

Elevation Top Dam: 884.1 NGVD (61 acre-feet)

SPILLWAY CREST:

a. Elevation — Main: 879.0 NGVD; Auxiliary: 881.3 NGVD

b. Type — Main: Concrete Drop Inlet; Auxiliary: Earth Channel

c. Width — Main: 8.0 feet; Auxiliary: 30.0 feet

d. Length — Main: 28.0 feet; Auxiliary: 70.0 feet

e. Location Spillover — All four sides - Main; Entire length - Auxiliary

f. No. and Type of Gates: None

OUTLET WORKS:

a. Type: 60-inch C.M.P.

b. Location: At main spillway

c. Entrance Inverts: 867.0 NGVD

d. Exit Inverts: 867.0 NGVD

e. Emergency Draindown Facilities: 16-inch sluice gate-60-inch C.M.P.

HYDROMETEOROLOGICAL GAGES:

a. Type: None

b. Location: None

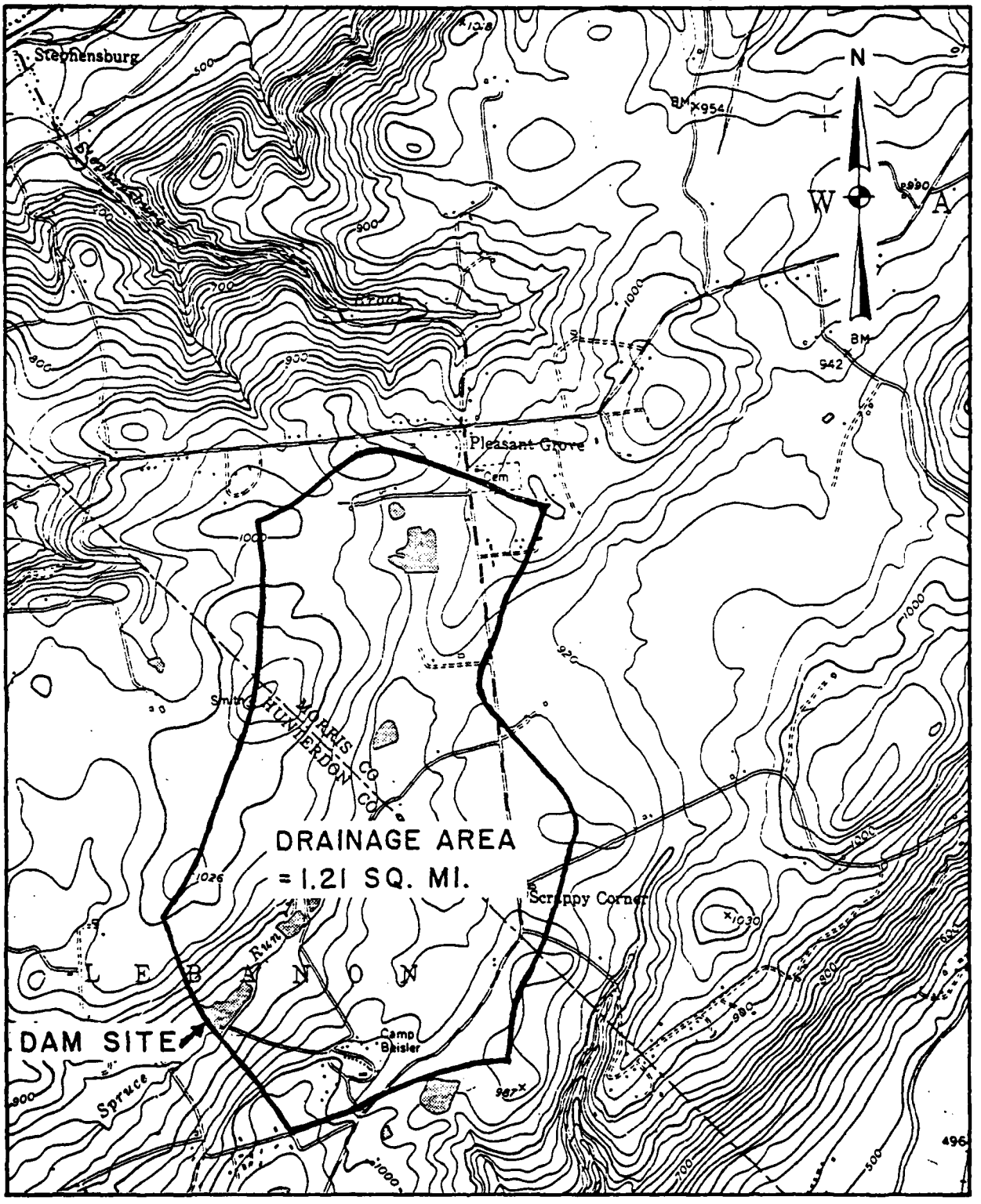
c. Records: None

MAXIMUM NON-DAMAGING DISCHARGE: 1416 cfs at elevation 884.1 NGVD.

APPENDIX D

HYDROLOGIC COMPUTATIONS

PLATE I, APPENDIX D



2,000 0 2,000 4,000

Scale: 1" = 2,000 FT.

CAMP BEISLER DAM
DRAINAGE BASIN

PRC Harris, Inc.
CONSULTING ENGINEERS

SUBJECT N. J. Dam Inspection
Camp Beisler Dam
COMPUTED BY S.B CHECKED BY

SHEET NO. 1 OF
JOB NO. 10-1176-01
DATE 1:7:80

Determination of PMP

Probable Maximum ppt. (inches) for an area of 10 square miles and 6 hour duration
= 26"

D.A = 1.21 sq miles

ZONE = C

The corps of Engineers recommended that 20 % reduction to be applied to the report value for a 10 sq miles drainage area in order to provide for the imperfect fit of the storm isohyetal patterns to the shape of the particular basin.

Because of the unlikelihood of a perfect strike of a storm center on any particular small basin, no variation is assumed between point and 10 square miles precipitation

P.M.P = 26" x (1-0.2) = 20.8" (Computer adopted this value after making adjustments.

Depth area duration relationship.
Percentage to be applied to the above 6 hr PMP

6 hr = 100 %
12 hr = 108 %
24 hr = 117 %
48 hr = 127 % (Not necessary)

INFILTRATION:
Initial Infiltration = 1 in
Const. Infiltration = 0.1 in/hr.

DETERMINATION OF Tc

1. Estimating Tc from velocity estimate and watercourse length (Ref. Design of Small Dam Fig 30)

	Slope	Vel	Remarks
Overland Flow	$\frac{1000-900}{4000} \times 100 = 2.5\%$	1.5	Postures Upper portion of watershed
Reach 1	$\frac{900-876}{1800} \times 1.3\%$	1.0	Natural Channel (Neglect flow through Channel)

$$Tc = \frac{4,000}{1.5 \times 3600} + \frac{1,800}{1 \times 3600} = 1.24 \text{ hrs.}$$

2. Estimating Tc assuming same velocity

$$Tc = \frac{5,800}{1 \times 3600} = 1.61 \text{ hrs.}$$

3. From Nomograph of design of Small Dam (S.C.S. Guide) – same as Kirpich

$$Tc = \left(\frac{11.9\ L^3}{H}\right)^{.385}$$

L in miles = 1.1 miles
H in Ft = 124 Ft

$$= \left(\frac{11.9 \times 1.1^3}{124}\right)^{.385}$$

$$= .45 \text{ hrs.}$$

Use Tc = 1.24 hrs

Lag = 0.6×1.24 = .74 hrs.

Area of Lake at normal pool level
= 5.0 Ac
(Information from the file)

Height of the Dam = 17.1'

Small Dam
Hazard Potential - Significant

S.D.F = $\frac{1}{2}$ PMF

Hydrologic Analysis

Drainage Area = 1.21 sq miles

Inflow Hydrograph at Reservoir was determined using HEC 1 DB program. Inflow routed through the reservoir.

SPILLWAY AND DAM

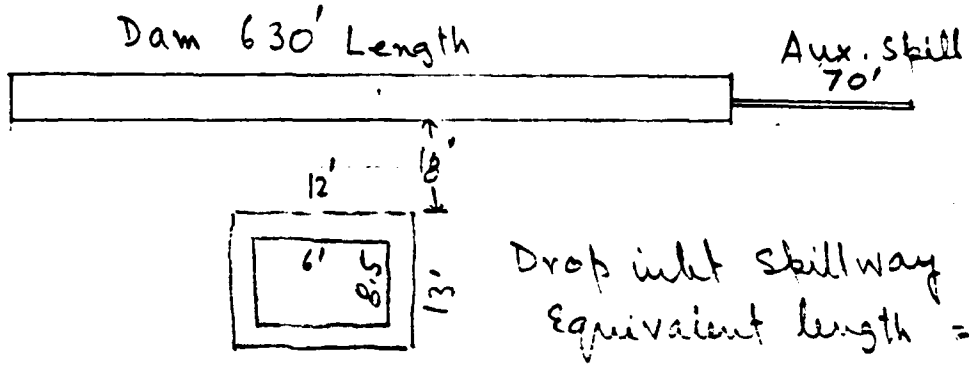
The drawings by U.S. Dept. of Agriculture, S.C.S, are used in the study.

Channel invert at the bottom of Dam
= 82' (S.C.S drawing)

Channel invert at the dam location
= 867.

∴ 785' is added will all the S.C.S drawing elevations to get the U.S.G.S. elevation.

PLAN OF THE DAM (Schematic



Drop inlet Skillway
Equivalent length = 39.5'

(Measured in the field)

Elevation of Dam = 5.1 ft above main spillway (from field)

Elev. = 94.0 (S.C.S. drwg) + 5.1 = 99.1

Elevation of Dam in U.S.G.S datum = 884.1 Ft

Elevation of Aux. Spillway = 96.3 (S.C.S drawing)
= 881.3 Ft (U.S.G.S)

Elevation of drop inlet Spillway = 94 (S.C.S dr)
= 879 Ft (U.S.G.L

Length of Pipe = 56 Ft
60" ϕ Bituminous coated
Corrugated Metal

For the Drop inlet spillway, water could enter through all sides of the inlet

Effective length of spillway = $L_s = 39.5'$

$$Q_s = C L_s H^{1.5}$$
$$= 3.3 \times 39.5\ H^{1.5} = 130.35\ H_s^{1.5}$$

Considering flow through the tube (5'ϕ)

$$Q_o = C_d \cdot A_o \sqrt{2g H_o}$$
$$= .63 \times \left(\frac{\pi}{4} \times 5^2\right) \times 8 \sqrt{H_o}$$
$$= 99 \sqrt{H_o}$$

H_o = Diff of elevation between H.W and T.W

Tailwater is assumed = 870

Elevation of water	Head over spillway H_s	Q through spillway $130.35\ H_s^{1.5}$	Head for orifice flow H_o	Flow through orifice $Q_o = 90\sqrt{H_o}$	
879	0	-		-	
880	1	130 → spillway control	10	284	
881.3	2.3	455	11.3	302	
882	3	677	12	311	
883	4	1,043	13	324	Flow regulated by pipe
884.1	5.1	1,501	14.1	334	
886	7	2414	16	360	
888	9	3,579	18	382	
890	11	4,755	20	403	
895	16	8,342	25	450	
900	21	12,544	30	493	

Stage - Outflow relationship :-

① Flow through Drop inlet = Q_o

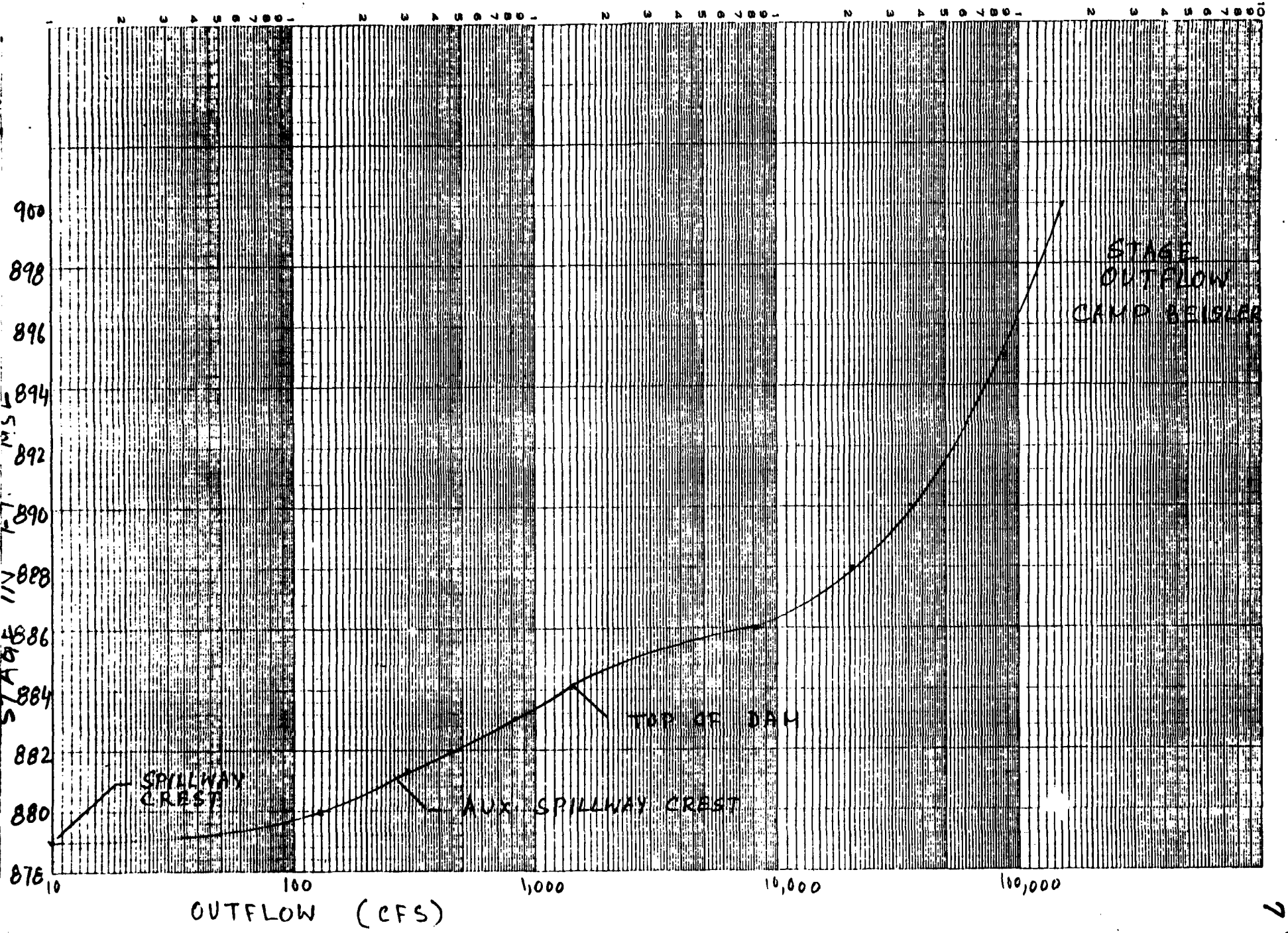
② Flow through Aux spillway = $Q_A = 3.3 L_A H_A^{1.5}$
$= 3.3 \times 70 H_A^{1.5} = 231 H_A^{1.5}$

③ Flow through Dam = $Q_D = 2.75 L_D H_D^{1.5} = 3.3 \times 630 H_D^{1.5}$
$= 2079 H_D^{1.5}$

	Stage ①	Inlet Q_o ②	H_A ③	Q_A $231 H_A^{1.5}$ ④	H_D ⑤	Q_D $2079 H_D^{1.5}$ ⑥	Q_{Total} ② + ④ + ⑥
Drop inlet →	879	0					0
	880	130					130
Aux. Spill →	881.3	302	0				302
	882	311	.7	135			446
	883	324	1.7	512			836
Dam →	884.1	334	2.8	1082	0		1,416
	886	360	4.7	2354	1.9	5,445	8,159
	888	382	6.7	4006	3.9	16,012	20,400
	890	403	8.7	5928	5.9	29,794	36,125
	895	450	13.7	11,714	10.9	74,816	86,980
	900	493	18.7	18,680	15.9	131,810	150,983

NO. 340R-1.510 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
5 CYCLES X 10 DIVISIONS PER INCH

EUGENE DIETZGEN CO.
MADE IN U. S. A.



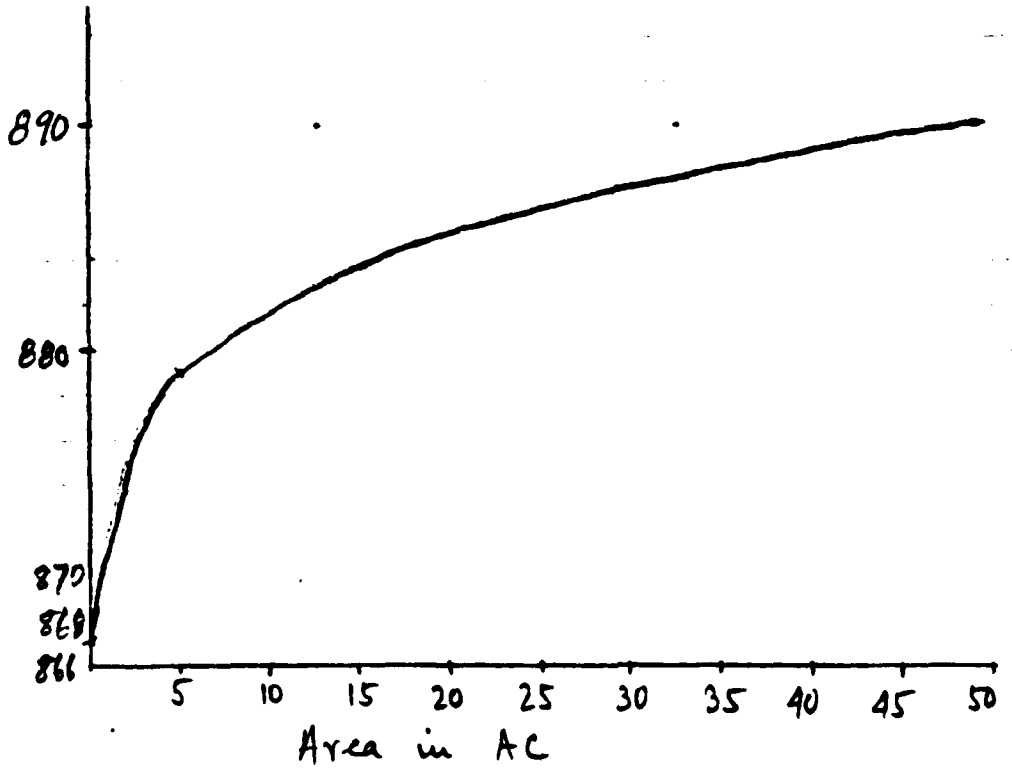
7

Elevation Area - Capacity relationship.

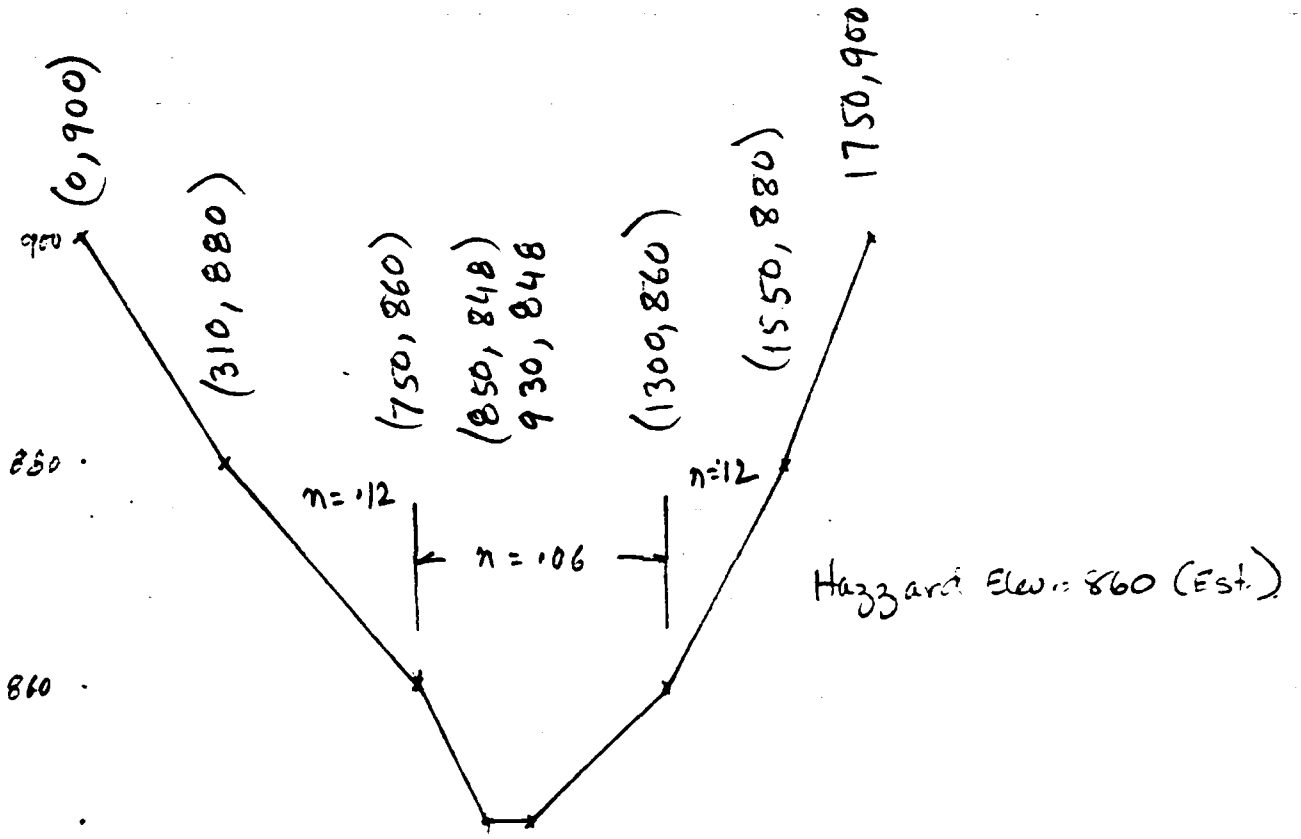
Information obtained from U.S.G.S Quad.

Ele.	867 (Bottom of Dam)	879	900
Surface Area (AC)	0	5.0	49.6

HEC 1 DB program will develop storage capacity from surface area elevation.



Cross-Section at D/S Reach



Reach 1

$L = 1{,}000$ Ft

$S = \frac{20}{1000} = .02$

DRAWDOWN TIME COMPUTATION

94 — El = 879

16" × 16" — El = 867.5

When the gate is open

Normal Elevation to start = 879

Inflow = $\frac{2 \text{ cfs}}{\text{mi}^2} \times 1.21 = 2.42$ cfs

$Q = CA\sqrt{2gh}$ $C = 0.62$

$Q = 8.8\sqrt{h}$

Assume T. W. Depth = 867

$A_2 = \left(\frac{h_2}{h_1}\right)^2 A_1$ $A_1 = 5$ $h_1 = 12$

$= \left(\frac{h_2}{12}\right)^2 5$

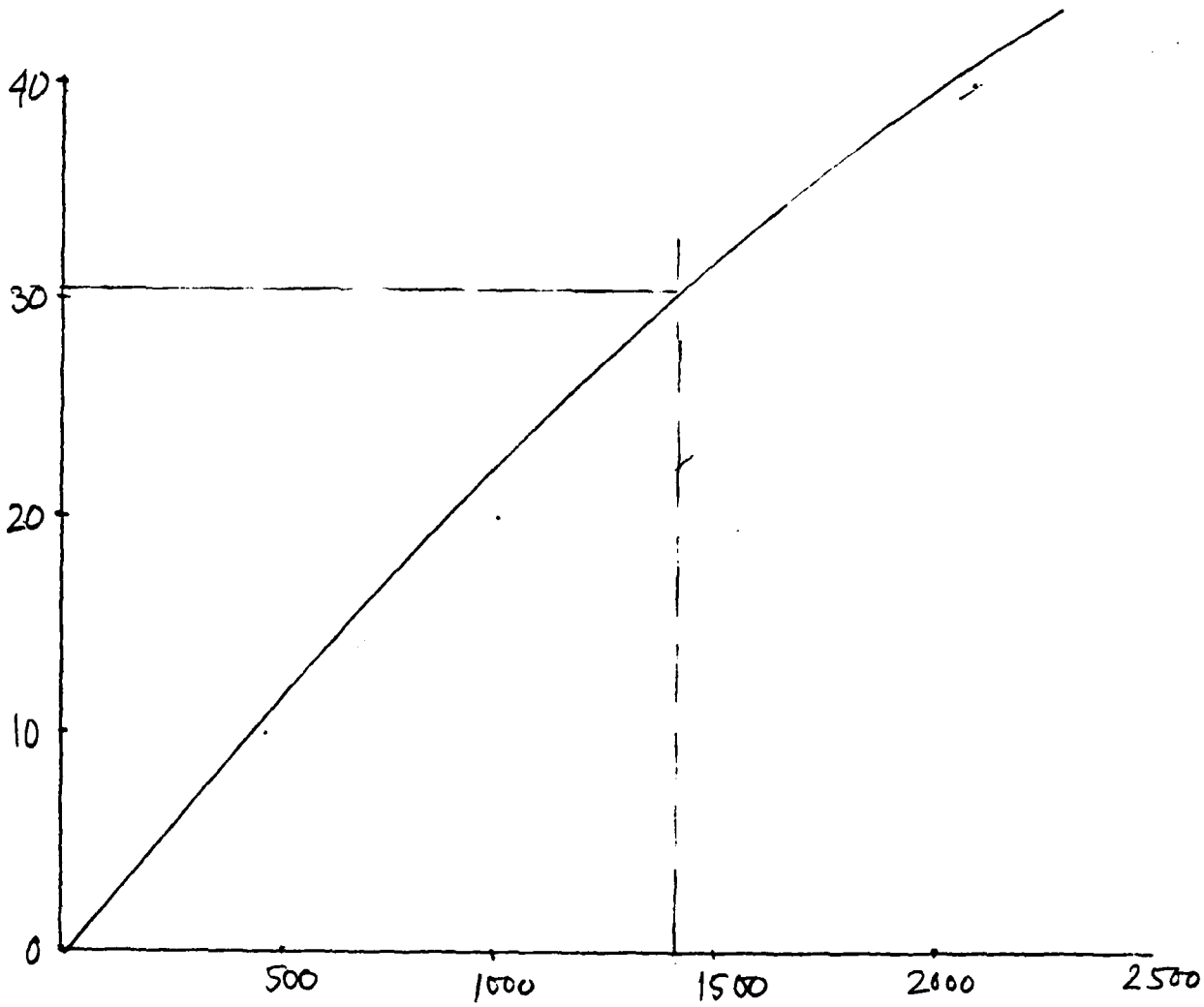
Drawdown time = $\frac{\text{Vol in AF} \times 43560}{Q \times 3600}$

$= \frac{\text{Vol} \times 12.1}{Q}$

Res El (Ft)	Area Ac (Ac)	AVG Area (Ac)	Vol AF (AF)	AVG Res El. Ft	Q $8.8\sqrt{h}$ CFS	Drawdown time $\frac{\text{Vol} \times 12.1}{Q}$ (HRS)	Cum time hrs HRS	Drawdown with inflow $\frac{2.42 \times t}{Q}$ (HRS)	Cum time hrs (Hrs)
					x	x			
879	5								
		4.235	8.47	878	29.2	3.5	3.5	.3	3.8
877	3.47								
		2.845	5.69	876	26.4	2.6	6.1	.2	6.6
875	2.22								
		1.735	3.47	874	23.3	1.8	7.9	.2	8.6
873	1.25								
		.905	1.81	872	19.7	1.1	9.0	.1	9.8
871	.56								
		.350	.70	870	15.2	.6	9.6	.1	10.5
869	.14								
		.070	.14	868	8.8	.2	9.8	.1	10.8
867	0								

Time of Drawdown without inflow = 9.8 hrs.
Time of Drawdown with constant inflow = 10.8 hrs.

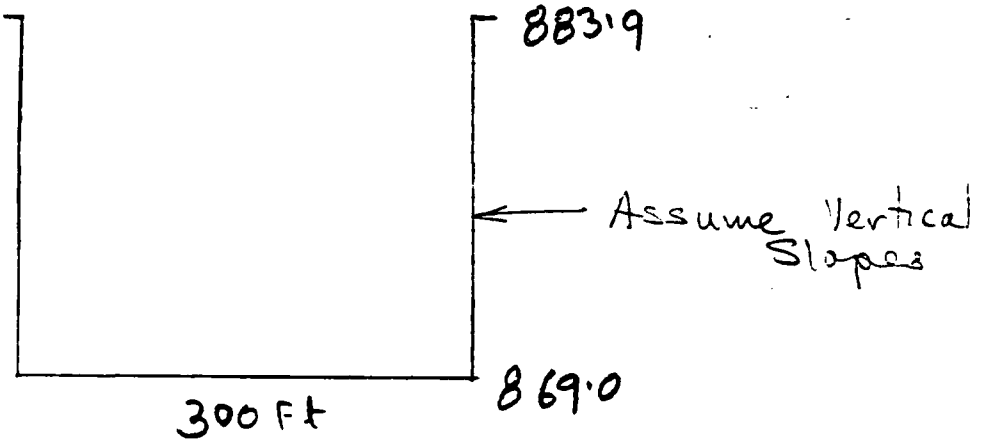
OVERTOPPING POTENTIAL



Overtopping of Dam occurs at El 884.1 Q = 1416 (30.5% of PMF

Breach Analysis

Assume breach analysis begins to develop when reservoir stage reaches above the Dam
Time of Failure = 16.0 hrs



Effect of breach was analysised 1000 Ft Downstream of the Dam.

Max Stage without Dam break = 850.8
Max Stage with Dam break = 851.4

(: : 0.6 ft change in W.S. El
Due to Dam break. at 0.4 PMF

```
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
 LAST MODIFICATION  26 FEB 79
*****************************
    1          A      N.J.. DAM INSPECTION
    2          AD     CAMP BEISLER DAM
    3          AI     MULTI RATIO PMF ROUTING
    4          J      100       0      15       0       0       0              0       0       0
    5          J1     4
    6          J      1         1      1
    7          J      .5        .4     .3       .2      .1
    8          K      0      RES                                    1
    9          A1     LOCAL INFLOW
   10          K      1         2      1.21             1.21
   11          C      0         26     100      108     117
   12          T                                                    1      .1
   13          W      .74
   14          X      -1        -.05   2
   15          K      1      DAM                                    1
   16          A1     ROUTING THROUGH DAM
   17          Y                                  1       1
   18          Y1     1                                            -879   -1
   19          Y4     879       880    881.3    882     883     884.1   886    888     890     900
   20          Y5     0         130    302      446     836     1416    8159   20400   36125   150983
   21          YA     0         5      45.6
   22          YI     867       879    900
   23          X      879
   24          X      884.1
   25          K      1      RESCH1                                 1
   26          KI     CHANNEL ROUTING BY MOD. PULS  REACH 1
   27          Y                                  1       1
   28          Y1     1
   29          Y6     .12       .06    .12      848     900     1000   .02
   30          Y7     0         900    310      840     1750    860    850     848     930     848
   31          Y7     1300      860    1650     840     1750    900
   32          K      99
```

[illegible] (HEC-1)
JULY 1978
[illegible]

[illegible]

RUN 08 APR 07 1981
[illegible]

N.J.. DAM INSPECTION
CAMP REISLER DAM
MULTI RATIO PMF ROUTING

JO SPECIFICATION

NO	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
1*0	3	15	0	0	0	0	0	0	0

JOPER	NWT	LROPT	TRACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLANE= 1 NRTIO= 1 LRTIO= 1
RTIOS= 0.50 0.40 0.50 0.20 0.10

SUB-AREA RUNOFF COMPUTATION

LOCAL INFLOW

ISTAO	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
RES		0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	2	1.21	0.0	1.21	0.80	0.000	0	0	0

PRECIP DATA

SPFE	PRS	R6	R12	R24	R48	R72	R96
0.00	26.00	100.00	109.00	117.00	0.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS 0.800

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	.00	0.00	1.00	1.00	0.10	0.00	0.00

UNIT HYDROGRAPH DATA
TC= 0.00 LAG= 0.74

RECESSION DATA
STRTQ= -1.00 QRCSN= -0.05 RTIOR= 2.00

UNIT HYDROGRAPH 17 END OF PERIOD ORDINATES, TC= 0.00 HOURS, LAG= 0.74 VOL= 1.00

1[illegible].	41[illegible].	65[illegible].	64[illegible].	4[illegible].	[illegible].	17[illegible].	117.	73.	45.	
2[illegible].	18.	11.	7.	[illegible].	3.	1.				

END-OF-PERIOD FLOW

HO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	HO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1. 1	0.1[illegible]	1	0.03	0.00	0.03	1.	1.01	13.45	51	0.52	0.49	0.03	677.
1.01	0.[illegible]0	2	0.03	0.00	.03	1.	1.01	14.00	52	0.52	0.49	0.03	928.
1.01	0.45	3	0.03	0.00	[illegible].03	1.	1.01	14.1[illegible]	53	0.62	0.60	0.03	1.04.
1.01	1.00	4	0.03	0.00	0.03	1.	1.01	14.30	54	0.62	0.60	0.03	1381.

1.01	1.15	5	0.03	0.00	0.03	1.	1.01	15.45	55	0.68	0.66	0.03	1552.
1.01	1.30	6	0.03	0.00	0.03	1.	1.01	16.00	56	0.62	0.60	0.03	1652.
1.01	1.45	7	0.03	0.00	0.03	1.	1.01	16.15	57	0.74	0.75	0.03	1756.
1.01	2.00	8	0.03	0.00	0.03	1.	1.01	16.30	58	0.76	0.75	0.03	1871.
1.01	2.15	9	0.03	0.00	0.03	1.	1.01	16.45	59	0.78	0.75	0.03	2005.
1.01	2.30	10	0.03	0.00	0.03	1.	1.01	17.00	60	0.78	0.75	0.03	2136.
1.01	2.45	11	0.03	0.00	0.03	1.	1.01	17.15	61	0.79	0.77	0.03	2317.
1.01	3.00	12	0.03	0.00	0.03	1.	1.01	17.30	62	1.56	1.56	0.03	2571.
1.01	3.15	13	0.03	0.00	0.03	0.	1.01	17.45	63	4.43	4.40	0.03	3088.
1.01	3.30	14	0.03	0.00	0.03	0.	1.01	18.00	64	1.11	1.08	0.03	4417.
1.01	3.45	15	0.03	0.00	0.03	0.	1.01	18.15	65	0.73	0.70	0.03	5550.
1.01	4.00	16	0.03	0.00	0.03	0.	1.01	18.30	66	0.73	0.70	0.03	5287.
1.01	4.15	17	0.03	0.00	0.03	0.	1.01	18.45	67	0.73	0.70	0.03	4947.
1.01	4.30	18	0.03	0.00	0.03	0.	1.01	19.00	68	0.73	0.70	0.03	3642.
1.01	4.45	19	0.03	0.00	0.03	0.	1.01	19.15	69	0.57	0.55	0.03	3074.
1.01	5.00	20	0.03	0.00	0.03	0.	1.01	19.30	70	0.57	0.55	0.03	2750.
1.01	5.15	21	0.03	0.00	0.03	0.	1.01	19.45	71	0.57	0.55	0.03	2362.
1.01	5.30	22	0.03	0.00	0.03	0.	1.01	20.00	72	0.57	0.55	0.03	2129.
1.01	5.45	23	0.03	0.00	0.03	0.	1.01	20.15	73	0.05	0.02	0.02	1704.
1.01	6.00	24	0.03	0.00	0.03	0.	1.01	20.30	74	0.05	0.02	0.02	1547.
1.01	6.15	25	0.07	0.00	0.07	0.	1.01	20.45	75	0.05	0.02	0.02	1382.
1.01	6.30	26	0.07	0.00	0.07	0.	1.01	21.00	76	0.05	0.02	0.02	985.
1.01	6.45	27	0.07	0.00	0.07	0.	1.01	21.15	77	0.05	0.02	0.02	521.
1.01	7.00	28	0.07	0.02	0.05	2.	1.01	21.30	78	0.05	0.02	0.02	548.
1.01	7.15	29	0.07	0.04	0.02	13.	1.01	21.45	79	0.05	0.02	0.02	264.
1.01	7.30	30	0.07	0.04	0.02	35.	1.01	22.00	80	0.05	0.02	0.02	246.
1.01	7.45	31	0.07	0.04	0.02	64.	1.01	22.15	81	0.05	0.02	0.02	230.
1.01	8.00	32	0.07	0.04	0.02	90.	1.01	22.30	82	0.05	0.02	0.02	214.
1.01	8.15	33	0.07	0.04	0.02	109.	1.01	22.45	83	0.05	0.02	0.02	200.
1.01	8.30	34	0.07	0.04	0.02	120.	1.01	23.00	84	0.05	0.02	0.02	187.
1.01	8.45	35	0.07	0.04	0.02	127.	1.01	23.15	85	0.05	0.02	0.02	174.
1.01	9.00	36	0.07	0.04	0.02	131.	1.01	23.30	86	0.05	0.02	0.02	163.
1.01	9.15	37	0.07	0.04	0.02	134.	1.01	23.45	87	0.05	0.02	0.02	152.
1.01	9.30	38	0.07	0.04	0.02	136.	1.01	24.00	88	0.05	0.02	0.02	141.
1.01	9.45	39	0.07	0.04	0.02	137.	1.01	24.15	89	0.05	0.02	0.02	132.
1.01	10.00	40	0.07	0.04	0.02	138.	1.01	24.30	90	0.05	0.02	0.02	123.
1.01	10.15	41	0.07	0.04	0.02	138.	1.01	24.45	91	0.05	0.02	0.02	115.
1.01	10.30	42	0.07	0.04	0.02	138.	1.01	25.00	92	0.05	0.02	0.02	107.
1.01	10.45	43	0.07	0.04	0.02	138.	1.01	25.15	93	0.05	0.02	0.02	100.
1.01	11.00	44	0.07	0.04	0.02	138.	1.01	25.30	94	0.05	0.02	0.02	93.
1.01	11.15	45	0.07	0.04	0.02	138.	1.01	25.45	95	0.05	0.02	0.02	87.
1.01	11.30	46	0.07	0.04	0.02	138.	1.02	0.00	96	0.05	0.02	0.02	81.
1.01	11.45	47	0.07	0.04	0.02	138.	1.02	0.15	97	0.00	0.00	0.00	76.
1.01	12.00	48	0.07	0.04	0.02	138.	1.02	0.30	98	0.00	0.00	0.00	71.
1.01	12.15	49	0.52	0.49	0.03	193.	1.02	0.45	99	0.00	0.00	0.00	66.
1.01	12.30	50	0.52	0.49	0.03	382.	1.02	1.00	100	0.00	0.00	0.00	62.
									SUM	24.34	21.65	2.71	68725.
										(618.1	549.1	69.1	1945.0)

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5380.	2512.	716.	687.	68674.
CMS	152.	71.	20.	19.	1945.
INCHES		19.31	22.00	22.00	22.00
MM		490.48	558.80	558.92	558.92
AC-FT		1245.	1419.	1419.	1419.
THOUS CU M		1536.	1751.	1751.	1751.

HYDROGRAPH AT STA PES FOR PLAN 1, RTIO 1

1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	6.	18.	
33.	65.	54.	60.	67.	66.	67.	63.	63.	69.	
6.	69.	63.	69.	69.	69.	69.	63.	97.	191.	
35.	404.	602.	490.	761.	-26.	877.	935.	1082.	1361.	

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5
				0.50	0.40	0.30	0.20	0.10
HYDROGRAPH AT	RES	1.21	1	2690.	2152.	1614.	1076.	538.
		3.13)		(76.17)(	60.94)(	45.70)(	30.47)(	15.23)(
ROUTED TO	DAM	1.21	1	2675.	2179.	1610.	1000.	460.
		3.13)		(75.76)(	61.70)(	45.59)(	28.32)(	13.03)(
ROUTED TO	REACH1	1.21	1	2687.	2248.	1552.	1004.	456.
		3.13)		(76.07)(	63.66)(	43.96)(	28.44)(	12.92)(

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1		INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
	ELEVATION	879.00	879.00	884.10
	STORAGE	20.	20.	61.
	OUTFLOW	0.	0.	1416.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV.	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.50	884.45	0.35	65.	2675.	1.50	16.25	0.00
0.40	884.31	0.21	64.	2179.	1.00	16.25	0.00
0.30	884.15	0.05	62.	1610.	0.25	16.50	0.00
0.20	883.31	0.00	52.	1000.	0.00	16.50	0.00
0.10	882.03	0.00	40.	460.	0.00	16.75	0.00

PLAN 1 STATION REACH1

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.50	2687.	851.0	16.50
0.40	2248.	850.8	16.50
0.30	1552.	850.1	16.50
0.20	1004.	849.4	16.75
0.10	456.	848.6	16.75

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
 LAST MODIFICATION  26 FEB 79
**********
     1          A        N.J..  DAM INSPECTION
     2          A2       CAMP BEISLER DAM
     3          A3       DAM BREAK ANALYSIS
     4          I    100      0      25      0      0      0      0      0      0      0
     5          I1   5
     6          J    1        1      1
     7          J1   .4
     8          P    0    OFS                                    1
     9          K1       LOCAL INFLOW
    10          K    1        2    1.21             1.21
    11          K    0       26     100     158     117
    12          Y                                              1      .1
    13          Y2       .74
    14          Y    -1   -.05      2
    15          K    1   DAM                                    1
    16          K1       ROUTING THROUGH DAM
    17          Y                                  1      1
    18          Y1   1                                                -879     -1
    19          Y4   879      886    8a1.3     882     883    884.1     886     888      890     900
    20          Y5   0        130      302     446     836     1416     8159    20400    36125   150983
    21          SA   0        5      49.7
    22          SC   867      879      900
    23          SE   879
    24          S1  884.1
    25          S2   300      0       369      1    88 .7    883.9
    26          K    1   REACH1                                 1
    27          K1       CHANNEL ROUTING BY MOD. PULS  REACH 1
    28          Y                                  1      1
    29          Y1   1
    30          Y6   .12      .06      .12     .16     960     1000     .02
    31          Y7   0        900      510     880     750      860     850      848      930     848
    32          Y7   1300     860     1550     680    1750      900
    33          Y    99
```

FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 24 FEB 79

RUN DATE: TUE. APR 07 1981
TIME: 13:11:13

N.J.. DAM INSPECTION
CAMP DETSLER DAM
DAM BREAK ANALYSIS

JOB SPECIFICATION

IO	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
1.0	0	15	0	0	5	0	0	0	0

JOPER	NWT	LROPT	TRACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NPTIO= 1 LRTIO= 1

RTIOS= 0.40

SUB-AREA RUNOFF COMPUTATION

LOCAL INFLOW

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
RES	1	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	3	1.21	0.0	1.21	0.00	0.000		0	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
1.00	26.00	100.00	108.00	117.00	0.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS 0.000

LOSS DATA

LOSS	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOR	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.10	0.00	0.00

UNIT HYDROGRAPH DATA
TC= 0.00 LAG= 0.74

RECESSION DATA
STRTQ= -1.00 QRCSN= -0.05 RTIOR= 2.00

UNIT HYDROGRAPH 17 END OF PERIOD ORDINATES, TC= 0.00 HOURS, LAG= 0.74 VOL= 1.00

122.	518.	659.	496.	49.	29.	19.	117.	72.	45.
24.	18.	11.	7.	4.	3.	1.			

END-OF-PERIOD FLOW

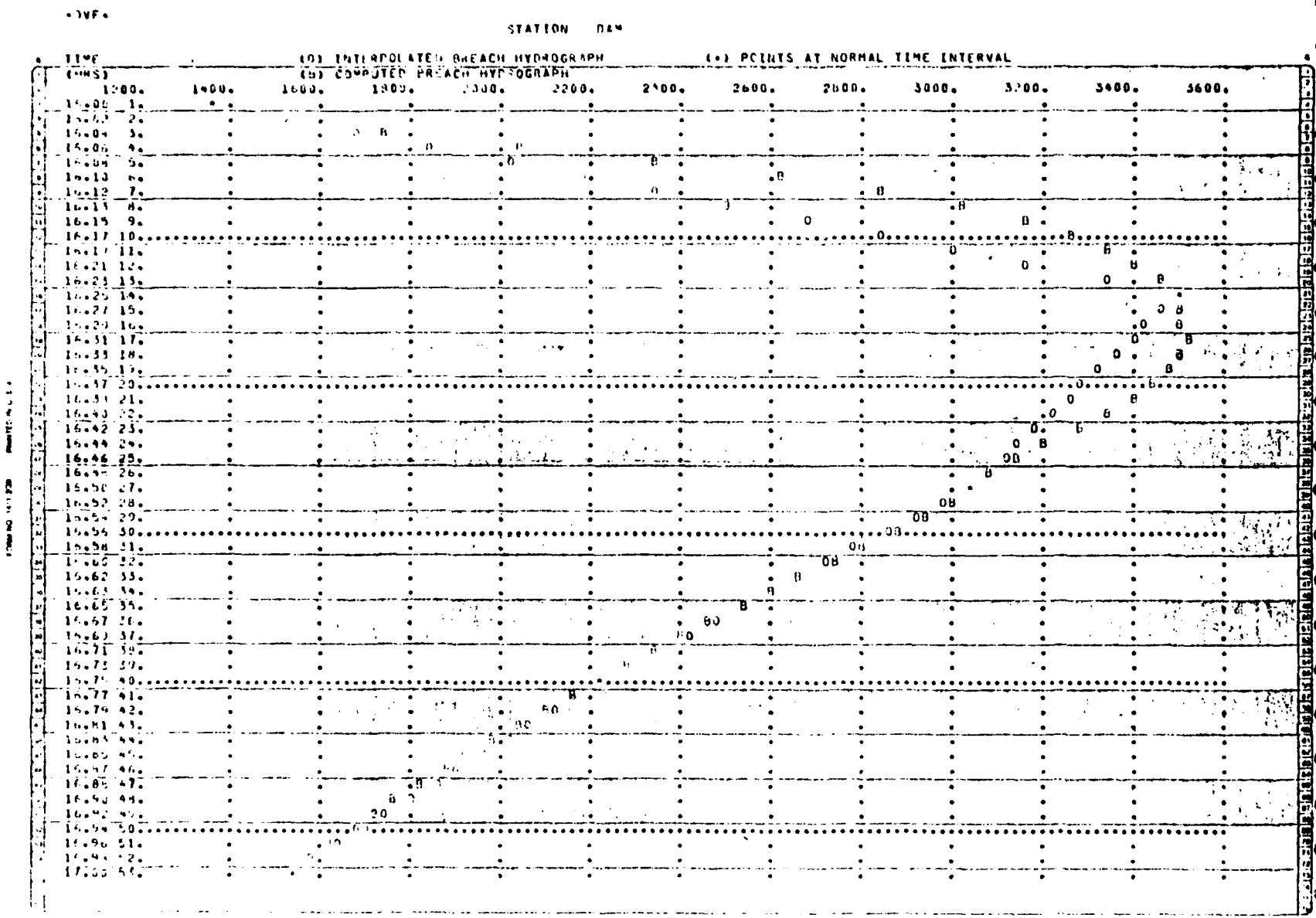
HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	0.15	1	0.03	0.00	0.03	1.	1.01	12.45	51	0.52	0.49	0.03	177.
1.01	0.30	2	0.03	0.00	0.03	1.	1.01	13.00	52	0.52	0.49	0.03	968.
1.01	0.45	3	0.03	0.00	0.03	1.	1.01	13.15	53	0.62	0.60	0.03	1204.
1.01	1.00	4	0.03	0.00	0.03	1.	1.01	13.30	54	0.62	0.60	0.03	1361.

1.01	1.15	5	0.03	0.00	0.03	1.	1.01	15.45	55	0.62	0.60	0.03	1952.
1.01	1.30	6	0.03	0.00	0.03	1.	1.01	16.00	56	0.62	0.60	0.03	1852.
1.01	1.45	7	0.03	0.00	0.03	1.	1.01	16.15	57	0.78	0.75	0.03	1755.
1.01	2.00	8	0.03	0.00	0.03	1.	1.01	16.30	58	0.78	0.75	0.03	1671.
1.01	2.15	9	0.03	0.00	0.03	1.	1.01	16.45	59	0.78	0.75	0.03	2005.
1.01	2.30	10	0.03	0.00	0.03	1.	1.01	17.00	60	0.78	0.75	0.03	2126.
1.01	2.45	11	0.03	0.00	0.03	1.	1.01	17.15	61	0.79	0.77	0.03	2217.
1.01	3.00	12	0.03	0.00	0.03	1.	1.01	17.30	62	1.58	1.56	0.03	2371.
1.01	3.15	13	0.03	0.00	0.03	0.	1.01	17.45	63	4.43	4.40	0.03	3048.
1.01	3.30	14	0.03	0.00	0.03	0.	1.01	18.00	64	1.11	1.08	0.03	4470.
1.01	3.45	15	0.03	0.00	0.03	0.	1.01	18.15	65	0.73	0.70	0.03	5380.
1.01	4.00	16	0.03	0.00	0.03	0.	1.01	18.30	66	0.73	0.70	0.03	5287.
1.01	4.15	17	0.03	0.00	0.03	0.	1.01	18.45	67	0.73	0.70	0.03	4547.
1.01	4.30	18	0.03	0.00	0.03	0.	1.01	19.00	68	0.73	0.70	0.03	3642.
1.01	4.45	19	0.03	0.00	0.03	0.	1.01	19.15	69	0.57	0.55	0.03	3074.
1.01	5.00	20	0.03	0.00	0.03	0.	1.01	19.30	70	0.57	0.55	0.03	2680.
1.01	5.15	21	0.03	0.00	0.03	0.	1.01	19.45	71	0.57	0.55	0.03	2362.
1.01	5.30	22	0.03	0.00	0.03	0.	1.01	20.00	72	0.57	0.55	0.03	2129.
1.01	5.45	23	0.0	0.00	0.03	0.	1.01	20.15	73	0.05	0.02	0.02	1904.
1.01	6.00	24	0.03	0.00	0.03	0.	1.01	20.30	74	0.05	0.02	0.02	1587.
1.01	6.15	25	0.07	0.00	0.07	0.	1.01	20.45	75	0.05	0.02	0.02	1182.
1.01	6.30	26	0.07	0.00	0.07	0.	1.01	21.00	76	0.05	0.02	0.02	805.
1.01	6.45	27	0.07	0.00	0.07	0.	1.01	21.15	77	0.05	0.02	0.02	521.
1.01	7.00	28	0.07	0.02	0.05	2.	1.01	21.30	78	0.05	0.02	0.02	368.
1.01	7.15	29	0.07	0.04	0.02	15.	1.01	21.45	79	0.05	0.02	0.02	284.
1.01	7.30	30	0.07	0.04	0.02	39.	1.01	22.00	80	0.05	0.02	0.02	246.
1.01	7.45	31	0.07	0.04	0.02	64.	1.01	22.15	81	0.05	0.02	0.02	230.
1.01	8.00	32	0.07	0.04	0.02	90.	1.01	22.30	82	0.05	0.02	0.02	214.
1.01	8.15	33	0.07	0.04	0.02	109.	1.01	22.45	83	0.05	0.02	0.02	200.
1.01	8.30	34	0.07	0.04	0.02	120.	1.01	23.00	84	0.05	0.02	0.02	187.
1.01	8.45	35	0.07	0.04	0.02	127.	1.01	23.15	85	0.05	0.02	0.02	174.
1.01	9.00	36	0.07	0.04	0.02	131.	1.01	23.30	86	0.05	0.02	0.02	163.
1.01	9.15	37	0.07	0.04	0.02	134.	1.01	23.45	87	0.05	0.02	0.02	152.
1.01	9.30	38	0.07	0.04	0.02	136.	1.02	0.00	88	0.05	0.02	0.02	141.
1.01	9.45	39	0.07	0.04	0.02	137.	1.02	0.15	89	0.05	0.02	0.02	132.
1.01	10.00	40	0.07	0.04	0.02	138.	1.02	0.30	90	0.05	0.02	0.02	123.
1.01	10.15	41	0.07	0.04	0.02	138.	1.02	0.45	91	0.05	0.02	0.02	115.
1.01	10.30	42	0.07	0.04	0.02	138.	1.02	1.00	92	0.05	0.02	0.02	107.
1.01	10.45	43	0.07	0.04	0.02	138.	1.02	1.15	93	0.05	0.02	0.02	100.
1.01	11.00	44	0.07	0.04	0.02	138.	1.02	1.30	94	0.05	0.02	0.02	93.
1.01	11.15	45	0.07	0.04	0.02	138.	1.02	1.45	95	0.05	0.02	0.02	87.
1.01	11.30	46	0.07	0.04	0.02	138.	1.02	2.00	96	0.05	0.02	0.02	81.
1.01	11.45	47	0.07	0.04	0.02	138.	1.02	2.15	97	0.00	0.00	0.00	76.
1.01	12.00	48	0.07	0.04	0.02	138.	1.02	2.30	98	0.00	0.00	0.00	71.
1.01	12.15	49	0.52	0.49	0.03	193.	1.02	2.45	99	0.00	0.00	0.00	66.
1.01	12.30	50	0.52	0.49	0.03	382.	1.02	3.00	100	0.00	0.00	0.00	62.
									SUM	29.34	21.63	2.71	68725.
										(118.)	(549.)	(69.)	(1945.)

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5380.	2512.	716.	687.	68694.
CMS	152.	71.	20.	19.	1945.
INCHES		19.31	22.00	22.00	22.00
MM		490.45	555.39	558.92	558.92
AC-FT		1245.	1419.	1419.	1419.
THOUS CU M		1536.	1751.	1751.	1751.

HYDROGRAPH AT STA 4ES FOR PLAN 1, RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
0.	0.	0.	0.	0.	0.	0.	1.	5.	14.	
28.	38.	43.	44.	51.	53.	54.	54.	55.	55.	
55.	55.	56.	56.	56.	56.	56.	56.	77.	153.	
271.	387.	482.	562.	613.	661.	702.	748.	802.	850.	


STATION DAM
TIME (HRS)
(O) INTERPOLATED BREACH HYDROGRAPH
(B) COMPUTED BREACH HYDROGRAPH
(+) POINTS AT NORMAL TIME INTERVAL
1200.
1400.
1600.
1800.
2000.
2200.
2400.
2600.
2800.
3000.
3200.
3400.
3600.